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EVERY
MONDAY

Croplife

WEST MARKETING EDITION

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TOTAL CIRCULATION
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BPA Member, Business
Publications Audit

A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL MANUFACTURER, FORMULATOR AND DEALER

Published by The Miller Publishing Co., Minneapolis, Minn.

Vol. 6

Publication at Minneapolis, Minn.
Accepted as Controlled Circulation

NOVEMBER 16, 1959

Subscription Rates:
\$5 for 1 year, \$9 for 2 years

No. 46

No Cranberries for Holidays?

Residue Scare Hits at Growers, Chemicals

By JOHN CIPPERLY

Croplife Washington Correspondent

WASHINGTON — A nation-wide furore has resulted from last week's report by Arthur S. Flemming, Secretary of Health, Education and Welfare, that some cranberries then on the market were contaminated by the herbicide aminotriazole. Newspaper headlines described by one industry observer as "the type they should use to announce World War

III" took up the cry and warned readers that such residues can induce cancer in humans.

The Secretary charged, in effect, that the misuse of the herbicide by cranberry farmers who disregarded label instructions had endangered public health. Association of such residues with cancer ignited a wave of reaction that has wrought serious harm to the cranberry producers and is expected by chemical industry lead-

ers to be felt in the pesticide trade for a considerable period of time.

The Flemming press conference here last week appeared to involve only a small amount of carlot shipments of cranberries containing the alleged contamination, which was in amounts far below any danger point so far as human consumption is concerned.

Announcement of the Flemming conference touched off a veritable

panic in the cranberry industry, halting sales of the Cranberry Cooperative Marketing Assn., although evidence on hand at Food & Drug Administration only involved some small sampling of the 1959 cranberry crop from the Pacific Northwest growing area. The FDA sampling of the 1959 Pacific Coast area crop disclosed examination of seven carlots of cranberries of which only one carlot was

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Alabama Fertilizer Salesmen Attend Auburn Short Course

Group Advised
To Know Products,
Understand Effects

AUBURN, ALA.—Fertilizer salesmen of the future must know more about the products they are selling. They must know about effects of fertilizer materials on soil and their availability to crops. In short, salesmen need to understand soil fertility and soil management well enough to advise customers as to what kind and grade is most economical to use.

These conclusions were presented by Dr. Howard T. Rogers, agronomy and soils department head, Auburn University Agricultural Experiment Station, at the opening session of a soil fertility short course for Alabama fertilizer and lime salesmen. Some 105 salesmen and other fertilizer industry personnel from throughout Alabama attended the Nov. 4-5 sessions at Auburn, which were designed to answer

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Linking of Cancer to Slight Residue on Cranberries Seen as Ridiculous by Trade

WASHINGTON—The cranberry war, precipitated by the Nov. 9 statement by Arthur S. Flemming, Secretary of Health, Education and Welfare, that some of the 1959 cranberry crop contained residues of aminotriazole weed killer, has involved not only the cranberry industry and government agencies, but the agricultural chemical industry as well.

Spokesmen for the two producers of aminotriazole, American Cyanamid Co., New York, and Amchem Products, Inc., Ambler, Pa., indicate that the cranberry war is a complete exaggeration of facts and the hysteria caused by the Food and Drug position has reached an almost ludicrous point.

A spokesman for American Cyanamid Co. told Croplife in a telephone interview that the maximum amount of herbicide residue found in any cranberry sample was .1 part per million as compared to the 100 parts per million fed to rats over a long period of time before any sign of malignancy was noted. "In order for an average adult to get the dose administered to the rat, he would have to eat 15,000 lb. of cranberries a day for the rest of his life."

The spokesman continued by reminding that the average per capita consumption of cranberries in the U.S. is .3 lb. a year, according to USDA statistics. This would figure out to something like .0008 lb. a day, on the average.

For Amchem, Robert Beatty, director of agricultural research, said, "This whole furore has been caused by misuse of the product; by somebody not following directions on the label. So far as anyone knows, this

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Fertilizer Processing Data Presented at Round Table

By LAWRENCE A. LONG
Editor of Croplife

WASHINGTON — Following the opening sessions which covered a broad range of fertilizer processing information and formulation calculations (Croplife, Nov. 9, page 1), the final two days of the fertilizer industry Round Table continued the technical presentations initiated by the earlier speakers. The Round Table began Wednesday morning, Nov. 4 and continued through Friday. Headquarters were at the Mayflower Hotel here, with 450 representatives of the fertilizer industry on hand to participate in the sessions.

A discussion on manufacturing conventional fertilizers brought out information on mechanical condition of

pulverized product and a session on segregation of particles within the mix. Dr. J. O. Hardesty, U.S. Department of Agriculture, Beltsville, Md., named six "most important" factors having to do with the mechanical condition of conventional fertilizers, with moisture content heading the list.

To obtain rapid and satisfactory curing, he said, the mixed fertilizer must have a relatively high moisture content which promotes a rapid rate of chemical reaction and contributes heat to the pile. It also increases plasticity of the mixture and promotes a high amount of soluble salts in solution.

The material should have finely-divided ingredients to promote thor-

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\$21 Million Urea Facility Planned

MADRAS, INDIA—A \$21 million contract has been signed between the Italian companies, Montecatini and Ansaldo, and the Neyveli Lignite Corp. Private, Ltd., for the construction of what the companies called the world's largest urea plant at Neyveli on the Indian peninsula, about 140 miles from the city of Madras.

Neyveli Lignite Corp. acted on behalf of the Indian government in the negotiations for the plant which falls within the framework of the second five-year plan for the development of industry in that country.

The Neyveli installation, to be designed and built by Montecatini, will have a capacity of 500 tons per day and will employ the Fauser-Montecatini process for urea manufacture. It will operate on the "total recycling system" and will transform all the ammonia exclusively into urea. Completion is planned for late 1962, with an anticipated on stream date in early 1963.

Plant site will be near a large lignite mine which will be equipped with

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400 Solutions Makers Attend Annual Meeting

Convention Highlights
Salesmanship, Talks
On New Processes

By LAWRENCE A. LONG
Editor of Croplife

ST. LOUIS, MO.—More than 400 persons registered at the 1959 convention of the National Fertilizer Solutions Assn. conducted at the Statler-Hilton Hotel here, Nov. 8-10. The group elected six new directors, featured talks on salesmanship, solutions and suspensions, stabilization of liquid fertilizers and formulations. A panel discussion on the general topic of "what's bothering you" was a popular feature of the program.

Some 36 suppliers to the liquid fertilizer trade maintained various types of displays in conference rooms covering two floors of the hotel.

O. L. Ohnstad, Ohio Liquid Fertilizer, Inc., South Solon, Ohio, NFSA president, told the group in the opening address of the meeting, that the use of liquid fertilizers is increasing at a faster pace than is any other type of fertilizer material. The number of plants manufacturing or mixing liquid goods more than doubled in the past two years, he said.

The industry is on the threshold of an entirely new era including new technology, new uses and concepts of various kinds of liquid fertilizers. As an example of new uses, he pointed out the fire extinguishing properties of ammonium phosphate now being used as a fire protection material on the farm. With it, he said, the farmer has a "built-in fire department" which he can store in the barn to be used as a fertilizer or, in case of necessity, as a fire extinguishing agent. The material, he said, has proved to be of more effectiveness than water particularly in stopping brush or forest fires.

Mr. Ohnstad, reviewing the activities of the association, said that 46 new members have joined the group since 1958, bringing the total mem-

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DEALERS, extension workers and the National Plant Food Institute combined efforts to sponsor high fertility demonstrations on alfalfa fields in Washington. Shown here examining a field after application are (left to right): F. Todd Tremblay, NPFI; Don Barrens, grower; A. T. Romano, Quincy (Wash.) Farm Chemicals, and Lee McFarlane, Pacific Cooperatives.

Washington Dealers Combine On Fertility Demonstrations

Quincy Valley, Wash., fertilizer dealers in cooperation with the Grant County Extension Service and the National Plant Food Institute recently put out some high fertility plots on selected alfalfa fields in the area. The purpose of the experiments was to make sure that plant food was not a limiting factor in plant growth.

Approximately \$70 worth of fertilizer per acre was applied in one heavy shot to fields throughout the area. The amount of plant food elements applied per acre was as follows: 500 lb. phosphate (P_2O_5), 250 lb. potash (K_2O), 13 lb. zinc (Zn), 48 lb. magnesium (MgO), 5 lb. boron (B), 128 lb. sulfur (S), and 6 lb. iron (Fe). "The amount of fertilizer applied should last for at least five years," said F. Todd Tremblay, regional director of the NPFI.

Elwood Dull, county extension agent, stated that, "We must constantly be aware of the amounts of plant food being removed per acre

by our high yielding crops. The amount removed must be continually replaced. On new soils just out of sagebrush, nitrogen may be the major limiting factor, but we find an increasing need for phosphate, zinc, and possibly other elements as we continue to farm. This dynamite shot of fertilizer will ensure an adequate supply of plant food for the alfalfa and crops following in the rotation. Nitrogen should be applied in recommended amounts when the alfalfa is plowed up and planted to crops such as corn or beets."

Soil samples were taken from 20 alfalfa fields in the area prior to application of the fertilizer. The samples were analyzed for nutrients at the Washington State University soil testing lab. Chemical determination on the samples included available phosphate and potash, organic matter, and pH. Most of the fields receiving the high fertility treatments were low to medium in phosphate or potash or both.

The fertilizer ingredients were mixed by Quincy Farm Chemicals and applied by Pacific Cooperative spreading truck. Other fertilizer dealers in the area also cooperated on the project.

Agricultural Chemicals Firm Forms Corporation

PHOENIX, ARIZ.—Articles of incorporation have been filed for Marchen Products Co., Inc., with principal offices to be here, to engage in the business of manufacturing soil builders, soil conditioners, soil tonics, plant foods, sprays, insecticides, etc., to distribute same by wholesale or retail, listing \$100,000 capitalization.

First officers of the corporation shall include Edward L. Leysen, Scottsdale, Ariz., president; Jack Hill, secretary-treasurer, and directors are Mr. Leysen; Gerald D. Sattler, chairman of the board; Joseph C. Metzger, Phoenix, and Bernice A. Whitmire, Phoenix.

Texans Visit Georgia

MOULTREE, GA.—A group of Texas county agricultural agents recently visited Colquitt County, Ga., to get information on the soil fertility program which is under way in that Georgia county.

The Texas agents are making plans for setting up similar soil fertility programs in their own counties. G. Y. Duke of Athens, district agent, accompanied the men.

Demonstration Plots Planned for Oregon

YAKIMA, WASH.—Plans were set in motion for a series of Oregon fertilizer demonstrations by Glen Holt, state chairman of the demonstrations committee of the Pacific Northwest Plant Food Assn.

Other members of the committee who were named include: Dr. D. H. Cheney, head of the soils department, Oregon State College; Dr. T. L. Jackson, soils specialist, Oregon State College; Art King and Howard Cushman, Oregon extension specialists; Grant Braun, chairman of the association's soil improvement committee; Leon Jackson, association secretary, and Mr. Holt.

County committees of industry agronomists have also been established to help county agents in the selection of sites, taking soil tests, putting out plots, checking response in plots and helping to organize farm meetings and tours connected with the project, Mr. Holt said.

Plots will be established on such crops as alfalfa, grass-legume pastures, corn and possibly small grain, he continued. The goal in each county is to end up with a total of 10 good demonstration plots.

"It has been estimated that a total of 30 soil samples per county will be necessary to locate the plots on soils where maximum results are to be expected," Mr. Holt said.

Subject to the acceptance of county agents in the respective counties, the committee tentatively selected the following counties: Clackamas, Marion, Lane, Josephine, Jackson and Baker.

Cotton Rust Harms New Mexico Cotton

UNIVERSITY PARK, N.M.—Cotton rust has caused considerable damage to the cotton crop in three Hidalgo County areas, reported Ed Hitson, county agent.

Mr. Hitson said that cotton farmers in the Rodeo area, west of Lordsburg, estimated the loss from the fungus disease at 50%. Farmers in the Cotton City and Animas areas, southwest of Lordsburg, estimated losses at 25 to 30%.

The rust causes premature defoliation and poor development of the bolls. The rust spores are blown from grama grass onto the cotton plants. The disease appeared in August after rains. The fungus causes reddish pustules on the tops of the leaves and orange pustules on the under sides.

Dr. T. E. Smith, associate plant pathologist of the New Mexico State University Experiment Station, and Gordon Hoff, extension agronomist, surveyed the Hidalgo areas. Dr. Smith said that in the Rodeo area there was such a heavy shower of spores from the grama grass that the foot-stalks holding the bolls became infected and brittle and were broken off by winds, increasing the loss.

The pathologist said Verticillium wilt had caused slight damage in the Cotton City, Animas and Rodeo areas.

Dr. Smith reported rust had caused losses of 5 to 10% in cotton fields south and west of Deming in Luna County after late summer rains. He said a localized rust infestation affected a few fields south of Radium Springs in Dona Ana County. Slight damage resulted. The disease tapered off as it moved east.

The rust occurs sporadically in the southwest at periods of five to 10 years, creating difficulties in preventive research, Dr. Smith said.

PUBLIC RELATIONS JOB

NIAGARA FALLS, N.Y.—Appointment of Arthur P. Schulze, of Cleveland, Ohio, to the public relations department of Hooker Chemical Corp., Niagara Falls, was announced by R. Wolcott Hooker, senior vice president.



Thomas G. Ferguson

Thomas G. Ferguson National Potash Head

NEW YORK—Thomas G. Ferguson has been elected president and chief executive officer of National Potash Co. The announcement was made by Richard C. Wells, former president, who was elected chairman of the board.

Mr. Ferguson joined National Potash Co. as vice president and general manager when the company was formed in 1955. He has been in charge of the development and operation of the company's mine and refinery 32 miles east of Carlsbad, N.M. In his new capacity Mr. Ferguson will continue to make his headquarters in Carlsbad.

A graduate of Carnegie Institute of Technology, Mr. Ferguson was vice president of the Pittsburgh Coal Co., division of Consolidation Coal Co. prior to his association with National.

157 California Firms Register to Sell Agricultural Minerals

SAN FRANCISCO — Some 157 firms, the largest number within a comparable period, have registered with the Bureau of Chemistry of the State Department of Agriculture to sell agricultural minerals in California, and have been approved as such registrants through next June 30.

Most of the companies are already known as manufacturers, distributors or retailers of farm chemicals.

The northern half of California is favored with 82 names, while 52 have been registered in southern California. Twenty-three companies are based in other states.

The bureau also lists 11 new jobber registrants, including six in northern California, and five in the south.

Twenty firms are listed as auxiliary plant chemical registrants through the end of the 1959-60 fiscal year, including four in northern California, eight in southern California, and eight from other states.

U.S. Borax Research Appoints Three Scientists

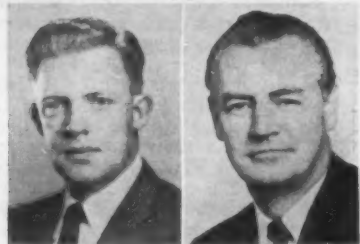
ANAHEIM, CAL.—Promotions of three staff scientists at U.S. Borax Research Corp. were announced by Dr. C. L. Randolph, vice president.

Dr. Edgar Fajans, formerly associate professor of chemical research, will be special assistant to the vice president.

Named as associate directors of chemical research are Drs. Howard Steinberg and A. L. McCloskey. Dr. Steinberg has been serving as assistant director of chemical research. Dr. McCloskey held the post of senior group leader in chemical research.

U.S. Borax Research Corp., with laboratory facilities at Anaheim, is a subsidiary of U.S. Borax & Chemical Corp.

Farm Bureau Service Announces Appointments



O. J. Arlien

Gordon Olson

ST. PAUL, MINN.—D. A. Williams, general manager of the Minnesota Farm Bureau Service Co., announced the appointment of Harold Goewey to head the sales and service department.



Harold Goewey

Mr. Goewey, who was formerly general sales manager, will be in charge of all outlying company plants, inventory warehouses and services pertaining to them.

Osborn Arlien has been named general sales manager replacing Mr. Goewey, and Gordon Olson, formerly head of personnel and patrons' relations, takes over Mr. Arlien's duties as assistant general sales manager.

Family Farm Will Remain, Speaker Says

CINCINNATI, OHIO—The trend toward fewer and larger farms will continue, but the family farm will remain the basic operating unit, a University of Illinois agricultural economist told a national bankers' meeting here recently.

Harold G. Halcrow, speaking before the American Bankers Assn., National Credit Conference, said that agriculture is undergoing a "sweeping economic readjustment to a new set of economic conditions, considerably different from those of the past."

He pointed out that the purchasing power of farm commodities had declined about one-fifth since the Korean War, and yet the value of farm assets had climbed to a new peak of \$203 billion. The 1959 dollar net income per person in agriculture is expected to be practically equal to that of the peak year of 1951.

Mr. Halcrow listed these future developments in agriculture:

1. The financial assets per worker and per farm will continue to rise as the number of people in agriculture declines. The assets per worker climbed from \$9,625 to \$20,651 between 1950 and 1959.

2. Assuming that the 1958 and 1959 corn crops were influenced by unusually favorable weather, the price of corn will average above \$1.12 bu. and hog prices above \$13.50 cwt. for the next five to 10 years.

3. Food consumption trends of the past 20 years will continue. Consumers will eat more meat, poultry and fluid milk.

4. Use of chemical weed sprays, insecticides, improved disease controls and mechanization of livestock operations may produce another upward surge of farm production.

5. Decline in the number of dairy farms will continue, with the remaining farms greatly expanding the number of cows and production per cow.

6. The family farm will remain the basic operating unit, but it will be more mechanized and more specialized, require higher capital investment and become a more businesslike operation than it has in the past.

To be of most help to farmers, Mr. Halcrow urged bankers to base their loans to farmers on the potential production of the entire farm rather than on just a single operation. Modern farming requires an entire line of credit, not just a piecemeal series of short-term loans, he declared.

The final solution of the farm income problem lies in continuing the adjustments in size and type of farm that have occurred in the past 10 years, Mr. Halcrow asserted. To make these adjustments possible, farm people must have employment opportunities, adequate credit, educational opportunities for young people and expansion of industry and other economic developments in rural areas, he concluded.



L. V. Clegg



Lester Christopher

PHOTOS SWITCHED—In recent issues of *Croplife* the pictures of L. V. Clegg, Canadian Industries, Ltd., Montreal, Canada, and Lester Christopher, Robert S. Wise Co., Wichita, Kansas, were transposed. The two are pictured correctly above. Mr. Clegg was recently appointed general purchasing agent for Canadian Industries, and Mr. Christopher was appointed vice president in charge of sales for Robert S. Wise Co.

FISH FERTILIZER

DUMAS, ARK.—A new market has developed in eastern Arkansas for commercial fertilizer, and dealers are taking steps to capitalize on the increasing demand.

The market: Fish farmers.

The producers of the Dumas Fish Farmers Cooperative Assn. have applied an average of 100 lb. of 8-8-2 fertilizer to each acre of their fish ponds.

And the market has become a comparatively large one. Agricultural officials say the 87 cooperative members now have 12,000 acres of ponds.

The fish-producing area extends from Beebe in north-central Arkansas through southeast Arkansas. The association was formed by rice farmers who decided to rotate fish production with their rice by allotting two-year periods for tracts of land to be under water.

Buffalo and game fish are grown in the ponds before the land is returned to rice farming.

Farmers have found that by applying commercial fertilizer they can increase more quick-growing microscopic plant food in their ponds. And the fish grow faster when they eat the tiny plant growth made more abundant by fertilizer usage.

Bud Blight Disease Transmitted by Seed Embryos, USDA Says

WASHINGTON—The virus causing bud blight disease of soybeans is transmitted in seed embryos, according to scientists of the U.S. Department of Agriculture and the Indiana Agricultural Experiment Station.

First reported as causing severe production losses in 1943, the virus known as TRSV may kill the growing point or terminal bud of young plants, retard pod development or make plants dwarf or barren. No evidence of soil transmission of the virus has been found and although an insect carrier is suspected, none has been identified.

Studies made of naturally infected plants in test plots by Kirk L. Athow and J. D. Bancroft showed that earliest symptoms of the disease appeared when the plants were 38 days old, about 18 days before flowering.

USDA's Agricultural Research Service reported that of the plants showing early symptoms, 41% produced no seed. Of those plants that did produce seed, 78% transmitted the virus to 91% of their progeny. As symptoms appeared closer to flowering, fewer plants transmitted the virus by seed, and fewer infected seeds were produced. This appears to confirm the theory that a virus enters the sex cells before fertilization and is transmitted by seed. Moreover, plants grown from infected seed pass the virus on to a large number of their progeny.

In their research, the scientists located the virus within the embryo of the seed. Extracts from embryos carried the virus to another host plant, the cowpea, but extracts from seed coats did not carry the virus. The virus remained infective in seed stored for nine months under ordinary storage conditions.

Pollard Appoints Division Manager

MINNEAPOLIS, MINN.—Fred L. Evans has been appointed sales manager of the fertilizer division of Pollard Manufacturing Co., announced Martin L. Luther, president.

According to Mr. Luther, the company is presently reorganizing its fertilizer division. Mr. Evans, formerly with Dempster Mill Manufacturing Co., is now making an extended tour of the Midwest to study fertilizer application problems.

NINE-MONTH FIGURES

NEW YORK—Witco Chemical Co., Inc., reports a net income of \$1,545,300 or \$2.03 per share, for the first nine months of 1959. This compares with \$1,179,400 net income excluding a non-recurring item, or \$1.86 per share on the smaller average number of shares then outstanding, for the comparable period of 1958. Sales and other income for the first nine months of 1959 set a record high of \$38,597,200, an increase of 32% over \$29,196,700 for the same period in 1958.

Melonworm Moth Specimens Found in California

SACRAMENTO, CAL.—Two adult specimens of the melonworm moth, a major pest of melon, squash and cucumber grown in the southern states east of the Rocky Mountains, have been taken in light traps distributed in Riverside and Imperial counties to detect pink bollworm of cotton.

The moths were identified by the taxonomic laboratory of the Bureau of Entomology, California Department of Agriculture, in the course of examination of moths collected from one trap in the Bard area of Imperial County and one trap in the Blythe area of Riverside County.

Records of the bureau indicate that the melonworm was reported in California in 1937 near Blythe and in 1940 near Brawley. However, subsequent surveys made to detect local infestations in those areas failed to show the presence of the pest.

Robert W. Harper, chief of the bureau, said that the melonworm begins to build up numbers in the Gulf states in the spring and migrates northward as far as Canada in the summer and fall. The cold winter weather kills off local populations of the pest in the northern part of the country but it persists in the southern states, Mexico and Central American countries.

Major crop damage by the melonworm consists of injury to buds, blossoms and leaves. There have been some reports of damage to the fruit of its host plants, melons, cucumbers, squashes and some gourds.

The California Department of Agriculture has a plant quarantine designed to prevent the introduction of melonworm from infested states. The state melonworm quarantine also applies to the pickleworm, a pest of more economic importance than the melonworm.

Coastal areas and the Sacramento and San Joaquin Valley would probably be more favorable locations for melonworm infestations than the desert regions of the state in which the two specimens reported to date were found, according to Mr. Harper.

The Bureau of Entomology is investigating to determine possible areas of local infestations. At this time of the year wild gourds would provide a source of infestation revealing the presence of the pests.

Additional light traps will be distributed in desert areas of Riverside and Imperial counties and additional surveys will also be made in Los Angeles and San Diego county coastal areas where fall host plantings of squashes and cucumbers exist.

FIRST QUARTER REPORT

MIDLAND, MICH.—The Dow Chemical Co. reported net income of \$22,327,471, or 84¢ per share of common stock outstanding, for the first quarter ended Aug. 31, 1959. Sales for the period totaled \$191,681,368. During the same period of 1958, net income was \$11,175,730, amounting to 43¢ per share on sales totaling \$157,209,359. Earnings before taxes were \$42,861,265 compared with \$21,520,182 the previous year.



Don Rose

DISTRICT SALESMAN—Reasor-Hill Corp., Jacksonville, Ark., announced the appointment of a new district salesman, Don Rose. Mr. Rose, who resides in Rochester, Minn., will represent the company in Iowa, Minnesota and Wisconsin.

Mississippi Insect Control Conference Announced

STATE COLLEGE, MISS.—New insecticides, new insects and new methods of control will all be discussed by leading entomology researchers at the sixth annual Mississippi Insect Control Conference Jan. 7-8 at Mississippi State University.

The latest research information on controlling cereal and forage insects will be reviewed by a panel composed of U.S. Department of Agriculture entomologists at MSU.

Research on livestock pests; progress reports of the Southern Region Plant Pest Control Group; forest and cotton insects, and the latest research on cotton insect control will be highlights of the conference.

Special emphasis will be placed on discussions of control of insects affecting man, including roaches, mosquitoes, sand flies and houseflies.

Aims and objectives of the new boll weevil research laboratory will be discussed by Dr. E. F. Knipling, director of entomology research, Agricultural Research Service, Washington, D.C.

Also included during the conference will be the announcement of Mississippi Cotton Insect control recommendations for 1960.

The annual meeting of the Mississippi Entomological Assn. will also be held during the conference.

Texas A&M to Test Brown Patch Eradication

COLLEGE STATION, TEXAS—Extensive tests for the eradication of "brown patch" in lawn grasses will be conducted by Texas A&M College this fall. A new chemical will be used in the program directed by Dr. Harlan E. Smith, who will work with 55 county agricultural agents.

Dr. Smith, who is extension plant pathologist, says the fungus attacks lawn grasses and has been particularly damaging to San Augustine grass.

ASSOCIATE CHAIRMAN

WOOSTER, OHIO—Dr. Curt Leben, one of the first American scientists to emphasize the value of antibiotics in stemming plant diseases, has been appointed associate chairman of the department of botany and plant pathology at the Ohio Agricultural Experiment Station here. Dr. L. L. Rummel, director, said that Dr. Leben, formerly head of Eli Lilly's agricultural research laboratories, has been chosen from a large field of applicants to fill the post left vacant by the retirement of Dr. H. C. Young. Interim associate chairman has been H. F. Winter.

Potash Deliveries Up in 3rd Quarter

WASHINGTON—Deliveries of potash for agricultural purposes in the U.S., Canada, Cuba, Puerto Rico, and Hawaii by the eight principal American producers and also the importers totaled 2,819,951 tons of salts containing an equivalent of 1,655,018 tons K_2O during the first nine months of 1959, according to the American Potash Institute. This was an increase of 6% in salts and K_2O over the same period in 1958.

Continental U.S. took 1,559,781 tons K_2O , Canada 53,356 tons, Cuba, 5,381 tons, Puerto Rico, 18,389 tons, and Hawaii, 18,111 tons K_2O . These figures include imports of 112,339 tons K_2O for only the first six months of the year. Exports to other countries were 204,979 tons K_2O .

Deliveries of potash for non-agricultural purposes amounted to 107,743 tons K_2O , an increase of 33% over last year. Total deliveries for all purposes were 3,336,885 tons of salts containing an equivalent of 1,967,740 tons K_2O , an increase of 8% in salts and K_2O .

During the third quarter of 1959, deliveries for agricultural purposes were 400,069 tons K_2O in continental U.S., 9,237 tons in Canada, 2,022 tons in Cuba, 1,594 tons in Puerto Rico, and 4,706 tons in Hawaii making a total of 417,648 tons K_2O , a decrease of 1% under last year. Import figures for the third quarter of the calendar year are not available at this time. Exports of potash to other countries during the third quarter were 84,985 tons K_2O , an increase of 23% over last year. Deliveries of potash for non-agricultural purposes were 32,615 tons K_2O , an increase of 14% over last year. Total deliveries for the third quarter were 904,207 tons of salts containing an equivalent of 535,248 tons K_2O , an increase of 3% over last year.

Chemical Export-Import Firm Starts in Illinois

CHICAGO—The formation of the Seaway Chemical Corp., an Illinois corporation, has been announced by



Jerome Kritchevsky

Prior to his association with Stepan Chemical, Mr. Kritchevsky was president of Ninol Laboratories, Inc., which was purchased by Stepan Chemical in 1957. Offices of Seaway Chemical Corp. will be at the Stepan address, 427 W. Randolph Street, Chicago, until next spring when Stepan moves to its new building in Northfield, Ill. At that time Seaway Chemical will relocate at 111 W. Monroe Street, Chicago.

Ohio Pesticide Institute To Hold 13th Annual Meeting

WOOSTER, OHIO—The 13th annual meeting of the Ohio Pesticide Institute will be held on Jan. 12-13 at the Lincoln Lodge, Columbus, Ohio.

Highlights of the meeting will include latest research results with pesticides and application equipment presented by personnel of the Ohio Agricultural Experiment Station and Ohio State University.

Samuel Alford, chief of the Cincinnati district of the Department of Health, Education and Welfare, Food and Drug Administration, will speak on "Progress Under the Miller Amendment."

STATEMENTS

(Continued from page 1)

residue was found only in the Northwestern part of the country; not in the eastern growing areas of Massachusetts or New Jersey, nor in Wisconsin.

"We have completed our two years' toxicological work, furnished the government agencies with the information and they have had it since 1958. In the opinion of our toxicologist, an extremely small amount of residue found on cranberries could not cause any harm to consumers. They found that the growth in rats occurred after almost a lifetime of use.

"No tumors at all were produced in dogs after they had been fed a diet of up to 500 ppm for an entire year.

"Only one rat out of the ten being tested, at the 100 ppm. level came up with a tumor," Mr. Beatty said.

"When used according to directions, to date not one single incident of residue on crops has been found. In the present situation, disregard of directions has apparently resulted in some residue on some berries because the application was made before harvest rather than after harvest.

"The harm done in the cranberry industry is widespread, and the impression given the public is that the chemical industry is acting in an irresponsible way by selling its products without knowing results of residues. On the contrary, we have faithfully complied with all government requirements and the studies have proved that it would be impossible for a person to ingest enough to cause harm."

Lea S. Hitchner, executive secretary of the National Agricultural Chemicals Assn., Washington, said that the current difficulty concerning pesticide residues on cranberries underlines, more strongly than ever, the necessity of applying such products according to the label. His statement follows:

"Action by the Food and Drug Administration in stopping the sale of certain cranberry products because of their possible contamination through misuse of a weed-killing compound emphasizes, once again, the importance of following directions on the label of a pesticide.

"In commenting upon the action of FDA, Arthur S. Flemming, secretary of health, education and welfare, stated that the weed killer, aminotriazole, had been misused by the growers in the northwest since label directions clearly indicated the product was to be used only after harvest. When the product is used as directed no residue will occur.

"It was on this basis that the product was registered by the U.S. Department of Agriculture under the provisions of the Federal Insecticide, Fungicide, and Rodenticide Act and in accordance with the Miller Amendment to the Food, Drug, and Cosmetic Act.

"The pesticide industry, the National Agricultural Chemicals Assn., the National Safety Council, and a number of government agencies have repeatedly stressed a program of "read and follow the label" when using pesticide chemicals.

"More education along these lines is needed. Had the principles of this program been followed it would not have been necessary for the Food and Drug Administration to take such drastic action in this matter.

"According to competent toxicologists who have extensively studied the chemical in question, the extremely small amounts present on cranberries could not offer any significant risk to the consumer. They point out that tumors were found in rats only after a lifetime of feeding on a diet containing approximately 100 times as much of the chemical as has been found on the contaminated lots of cranberries, and that cranberries con-

stitute only a small fraction of the total human diet.

"They further point out that humans would have to subsist almost entirely on a diet of these cranberries for years in order to approximate the conditions which cause tumors in the test animals.

"The Food and Drug Administration has not established a tolerance for residues of aminotriazole on cranberries or other food crops. However, if the product is used according to label directions it will not result in any residues on the harvested crop and therefore presents no hazard to the public health. This was pointed out by Secy. Flemming and George P. Larrick, FDA commissioner, at a press conference held in Washington on Nov. 9. In fact, these officials cited aminotriazole for its effectiveness as a weed killer when used according to directions."

FDA STATEMENT

The statement released by Mr. Flemming at his news conference on Nov. 9, precipitated the turmoil which has brought numerous unfavorable reactions throughout the country. Portions of Mr. Flemming's statement follow:

"The Food and Drug Administration today (Nov. 9) urged that no further sales be made of cranberries and cranberry products produced in Washington and Oregon in 1958 and 1959 because of their possible contamination by a chemical weed killer, aminotriazole, which causes cancer in the thyroid of rats when it is contained in their diet, until the cranberry industry has submitted a workable plan to separate the contaminated berries from those that are not contaminated.

"The Food and Drug Administration has already discovered contamination of some of the 1959 crop and is undertaking a check of the 1958 crop.

"The Food and Drug Administration will use its normal procedures of investigation and seizure in coping with this problem. . . .

"Over 3 million pounds of cranberries from the 1957 Northwest crop and a small amount from the 1957 Massachusetts crop are now being destroyed because of contamination by the weed killer. This action is being taken voluntarily by the national cranberry association, with the supervisory cooperation of the Food and Drug Administration.

"Commissioner (George P.) Larrick tells me that so far there is no information to implicate 1958 and 1959 cranberries grown in Wisconsin, New Jersey and Massachusetts, the other principal growing areas. An investigation is nevertheless under way in these areas, Mr. Larrick said, and if evidence of contamination is found, appropriate action will be taken.

"In view of what has resulted from the improper use of aminotriazole on cranberry bogs, it is obviously imperative that this chemical not be used on any other crops in a way that will leave a residue in or on the produce. Growers should follow meticulously the directions for use on the pesticide label registered with the Department of Agriculture.

"The Food and Drug Administration is looking into the situation to determine whether any other crops are contaminated. If residues are found, the information will immediately be made public and appropriate legal action will be taken. . . .

"In May of this year evaluation of experimental data submitted by the manufacturers (Amchem Products, Inc., Ambler, Pa., and American Cyanamid Co., New York) was completed, and the conclusion was reached that aminotriazole is a carcinogen. The Food and Drug Administration then began checking on grower spray practices and perfecting the analyti-

cal method for detecting residues of the chemical. The national cranberry association likewise again instituted its own system of inspecting growers and holding for analysis all lots from growers where there was any reason to suspect misuse of the weed killer.

"Commendable though the association's program is, it is apparently not fully effective.

"Examination of the first series of samples from the newly harvested 1959 Northwestern crop has just been completed. Two interstate shipments out of 7 examined so far have been found definitely contaminated. Seizure is being recommended to the Department of Justice on one of these shipments. The other lot containing residues has already been distributed. Preliminary results on 10 other lots not yet shipped, and evidence that some growers have again failed to follow good agricultural practice in use of the weed killer, indicate that we are likely to find additional contaminated lots in the 1959 crop.

"In view of the findings on the 1959 Northwestern crop, and the previous history of the 1957 crop, we believe it reasonable to assume that that 1958 crop may also be contaminated.

"Because of the implications of this incident in its relationship to the safety of our food supply, I am prompted to make the following additional comment:

"As the cranberry episode illustrates, the Food and Drug Administration has declined to set any tolerance for any amount of a chemical in foods if the chemical produces cancer when fed to test animals. This principle is set down in the Food Additives Amendment, enacted last year, in a specific provision prohibiting the Food and Drug Administration from setting any tolerance for any such chemical. Even though the earlier Pesticide Amendment, which is applicable to the cranberries, does not contain such a specific prohibition, the same principle has been applied.

"The application of this principle is necessary in our opinion because while in theory there may be a minute quantity of a carcinogen which is safe in foods, in actuality our scientists do not know whether this is true or how to establish a safe tolerance.

"Therefore, we would oppose any attempt to take the cancer clause out of the Food Additives Amendment, and we will support the inclusion of such a clause in the color bill which is now before Congress."

Delaware Chemical Employment Still Firm

WILMINGTON, DEL. — Employment in chemical manufacturing in Delaware remained firm during September. The employment level was estimated at 26,700, the same as in August, according to the monthly report of the Delaware Unemployment Compensation Commission.

The employment total in July was 26,500. The number of workers in the chemical industry is still 400 less than September a year ago when 27,100 were employed.

Average weekly earnings of the production worker increased between August and September from \$126.07 to \$128.24. A gain was noted in average hourly earnings, \$3.06 in August and \$3.09 in September. An increase was noted in the work week, 41.2 in August and 41.5 in September.

Arizona Meeting

TUCSON, ARIZ.—Jan. 20-21 have been set for the Third Annual Arizona Fertilizer Conference at the University of Arizona campus, Tucson. The conference will be presented by the University of Arizona with cooperation of soil improvement committee, Arizona Agricultural Chemicals Assn., and the National Plant Food Institute.

'Pestilizer', 'Agrichembiz' Make Appearance at California Meeting

By GODFREY LEHMAN
Croplife Special Correspondent

SAN FRANCISCO — A widely known western entomologist turned etymologist last week at the 36th annual convention of the California Fertilizer Assn., San Francisco, by coining two new words descriptive of the changing picture of the agricultural chemical industry: "Pestilizer" and "Agrichembiz."

Dr. Guy F. MacLeod, vice president of research, Sunland Industries, Inc., Fresno, Cal., applied the former term to the industry's newest development, compounds of fertilizer and pesticides. Such compounds, he predicted, would come into increasing demand by farmers, and he foresees a "steady rise" in "pestilizer" mixtures during the next decade. Manufacturers who are not equipped to produce such compounds "must learn how" to make them, he advised.

"The fact remains that the grower will demand pestilizers where they can show results," he said.

Dr. MacLeod pointed out that some 120,868 tons had been purchased in the U.S. in 1956 and the amount increased rapidly in the succeeding three years.

As to "Agrichembiz", Dr. MacLeod explained that this inclusive term could be adapted to the situation where an increasing number of fertilizer manufacturers are also producing pesticides and offering wider services to the farmer.

The days of rigid compartmentalization are over, he said, with the "endlessly evolving" number of synthetic organic chemicals. The farmer is not interested in the different fields of specialization within the industry. He only wants to get compounds which will give him a good return and greater profit.

As if to underline this last point, Dr. Malcolm H. McVickar, chief agronomist of the California Spray-Chemical Corp., Richmond, said that the fertilizer industry's greatest service to self and customer is not merely to sell fertilizer, but to develop a fertilizer program for the farmer.

Since the farmer's interest is his particular needs will promote his own profit, a program adapted to his loyalty to the fertilizer industry, he indicated. To believe that a pound of nitrogen is a pound of nitrogen no matter how used is not enough, according to Dr. McVickar. The right fertilizer depends on many factors such as conditions of soil, the crop, seasonal requirements, state of maturity, and environment. All these influences alter the responses of the fertilizer.

"Every fertilizer material," he concluded, "has definite plus factors, and when used to capitalize on these properties outperforms competitive materials."

Floyd Hornbrook, vice president of research of the Best Fertilizer Co., Lathrop, Cal., developed another point of Dr. MacLeod's. Without using the new term "pestilizer," he discussed the possibility of real savings resulting in application costs and sometimes in materials through such mixtures. The most common practice, he said, were formulations of pesticides with granular or crystalline fertilizers. More cautious than Dr. MacLeod, Mr. Hornbrook believes that "the bulk" of fertilizers and pesticides will continue to be applied separately.

During a technical discussion of the manufacture of wet process phosphoric acid, Mr. Hornbrook explained that the biggest recent advance is the adoption of the rock calcination method as a means of upgrading the material. The wet process acid is becoming increasingly pre-

ferred over furnace grade despite impurities in the former. Means are being developed to remove these impurities, he said.

Three other speakers turned their attention to "how to make money and still make chemicals." Larry M. Roberts, general manager of Shell Chemical Corp., San Francisco, suggested that the price structure was too low in terms of costs of production and services offered, and that the market is too small to support the current number of suppliers.

William E. Snyder, manager of the agricultural chemical division of Wilbur Ellis Co., Los Angeles, agreed that prices were too low, and added that with the right pricing, sales might drop 20%, but profits would

go up 50% with good prospects of gaining back the lost market. An indiscriminate credit policy also adds to the manufacturer's losses, he said.

James F. Sloan, president of the J. F. Sloan Co., Salinas, Cal., concluded the discussion by suggesting the establishment of a firm business policy regarding prices, credit, past due accounts and employee relationships. "Sound policies administered soundly will lead to business stability," Mr. Sloan said.

New officers of the association, elected Nov. 9, include D. W. Galbraith, president of Agriform of Northern California, president; James F. Sloan, vice president; Larry M. Roberts, secretary, and John N. Williams, General Fertilizer & Supply Co., Chula Vista, Cal., treasurer. Sidney H. Bierly was reelected general manager.

New directors elected to three-year terms include John Taylor, John Tay-

lor Fertilizers, Sacramento; William C. Clines, American Potash & Chemical Corp., Los Angeles; Sam Mooschekian, Downey Fertilizer Co., Downey, and Mr. Sloan.

Oregon Insecticide Control Group Directors Nominated

ADRIAN, ORE. — Directors from the proposed Oyhee insecticide control area were nominated by seed growers at a recent meeting here.

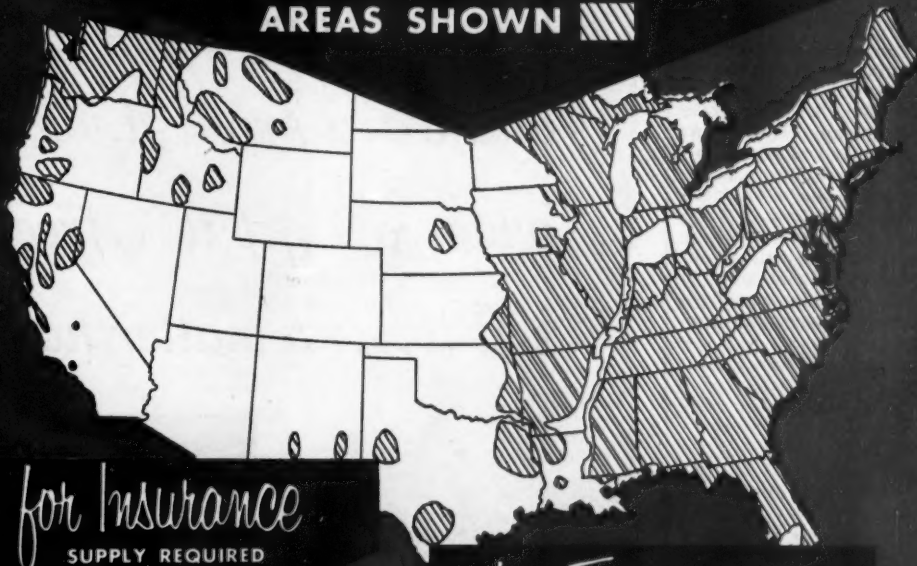
Six names were submitted on petitions that will be forwarded to the state department of agriculture. They are Carl Simpson, Vern Garner, Jim Langley, H. C. Okano, Lee Stoker and Magnus Ekanger.

The Oregon Department of Agriculture will announce the date of the referendum on the district following receipt of the petitions. Each petition for director contained 25 signatures.

The proposed district would provide for control of insecticides used in the Sunset Valley area.

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W. LAFAYETTE, INDIANA

United States Borax & Chemical Corporation

630 SHATTO PLACE LOS ANGELES 5, CALIFORNIA
80 ROCKEFELLER PLAZA, NEW YORK 20, NEW YORK

Monsanto

21, 1958, by Fisons Ltd., Felixstowe, Suffolk, England.

Algon, in capital letters, for fungicide formulation for killing algae bloom in lakes, ponds and other waters. Filed April 29, 1958, by the Hubbard-Hall Chemical Co., Waterbury, Conn. First use March 3, 1958.

Terra Fume-2, in hand drawn letters, for soil fumigant for application to the soil for control of root knot, meadow and stunt nematodes. Filed June 6, 1958, by Frank S. Reid, d.b.a. Quality Chemical Co., Wilson, N.C. First use March 31, 1958.

Terra-Liquid, in capital letters, for hydraulic fertilizer. Filed Aug. 25, 1958, by Jewell Chemical Corp., Lynch, Md. First use July 24, 1958.

Lawn Phix, in capital letters, for preparation for use as insecticide, herbicide, fungicide and bactericide on lawn and turf. Filed Sept. 12, 1958, by Chemley Products Co., Chicago. First use Jan. 4, 1958.

Design, black oval with spears jutting out and word Insecta-Tox imprinted, for insecticide. Filed Oct. 8, 1958, by Commonwealth Sanitation Co., Pittsburgh, Pa.

Golden Maize, in hand drawn letters, for organic mulch. Filed March 11, 1959, by Cornco, Memphis, Tenn. First use Jan. 5, 1959.

Nutri-Gran, in hand drawn letters, for plant food. Filed April 2, 1959, by W. R. Grace & Co., New York. First use Feb. 25, 1959.

Design, circle with Sinclair and drawing of prehistoric animal enclosed, for anhydrous ammonia for use as a fertilizer. Filed June 2, 1959, by Sinclair Refining Co., New York. First use March 27, 1959.

Design, outline shape enclosing word Sinclair and drawing of prehistoric animal, for anhydrous ammonia for use as a fertilizer. Filed June 2, 1959, by Sinclair Refining Co., New York. First use April 2, 1959.

California Farm Income

SAN FRANCISCO, CAL.—California's cash farm income in 1958 reached a record total of \$2,852,792,000, an increase of 3.6% over 1957, and 14.4% more than the 1947-56 average. Announcement of the record-breaking total was made by the California Crop and Livestock Reporting Service at the California Department of Agriculture.

California in 1958 maintained first place among the states in the nation's farm economy, producing over 8% of the national total cash farm income.

NEW ASSIGNMENT

PHILADELPHIA, PA.—Rohm & Haas Co. announced the appointment of John C. Haas as director of purchases and traffic. Mr. Haas has been serving as vice president in charge of industrial relations. In his new assignment, effective Oct. 19, he succeeds Dr. Peter J. Clarke, former director of purchases.

Nematode Loss Surveyed in Texas

COLLEGE STATION, TEXAS — Plant nematodes cause an estimated yearly loss of at least one-tenth of the farmers' gross income in the U.S. Nematode loss estimates are unavailable for Texas; the damage, however, is considerable. On susceptible crops, according to Harlan E. Smith, extension plant pathologist, the loss may exceed 50% or in extreme cases may cause total destruction.

Mere presence of these almost microscopic animals does not necessarily indicate economic damage to plants. Loss will be governed by the nematode species, population buildup and environmental conditions. In some cases the care the crop receives, such as fertilizing and watering, plays a large part in limiting or promoting nematode damage. High populations of some species appear to have little, if any, detrimental effect on some plants.

General above-ground symptoms of nematode injury consist of stunted growth, loss of yield and plant nutrient deficiency symptoms. Seldom do nematodes suddenly kill a plant. Decline often is slow. Other symptoms of nematode damage are yellowing of foliage; forked, crooked or bushy appearance of fleshy tap roots, such as carrot; stubby, small root systems of plants with excessively branching roots; small roots larger near the tip end; wilting of apparently healthy (but sometimes not vigorous) plants in summer heat, reviving overnight and abnormal brown or black spots on roots.

Kansas Schedules Three Dealer-Agent Schools

WASHINGTON — Three district Fertilizer Dealer-County Agent Training Schools are slated for Kansas the second week in December, announced the National Plant Food Institute.

All fertilizer companies doing business in Kansas are urged to get their salesmen and dealers to attend.

Dates and locations of the schools are: Dec. 9, Chanute; Dec. 10, El Dorado, and Dec. 11, Wichita. Sessions will start at 1 p.m. and continue through evening dinner.

Among subjects on the various programs: "Kansas Crop Fertilizer Results for 1959"; "Review of Soil Testing"; "How to Use Soil Tests to Sell Fertilizer"; "Investments and Returns from Fertilizer"; "Possibilities of Financing Fertilizer Purchases," and "Fertilizer—Key to Efficiency."

Speakers will include: Dr. F. W. Smith and E. A. Cleavinger, of the Kansas State University agronomy department; Dr. Harold E. Jones, director of extension; Dr. W. D. Guy, college agricultural economist; John Miller, Consumers Cooperative Assn.; E. J. Hoffman, Farm Store Merchandising magazine; Harry Rash, First National Bank, Thayer, Kansas, and V. E. Payer, El Dorado National Bank.

Arlan D. Woltemats, NPFI district representative, has cooperated with the college and county agents in setting up arrangements for the schools.

The three district training schools will follow the annual Kansas Fertilizer Conference, and the Kansas Fertilizer Dealers Conference, scheduled for Manhattan, Dec. 7 and 8, respectively.

NAMED U.S. AGENT

NEW YORK—H. J. Baker & Bro. has been appointed exclusive U.S. agent for the urea production of Comptoir Belge de l'Azote, Brussels, Belgium. The Belgian firm, also known as Cobelaz, is one of Europe's largest producers of nitrogen. In addition to supplying urea for fertilizer, feed, and industrial users in the U.S., H. J. Baker will also serve as agent for Puerto Rico, Cuba and the Dominican Republic.

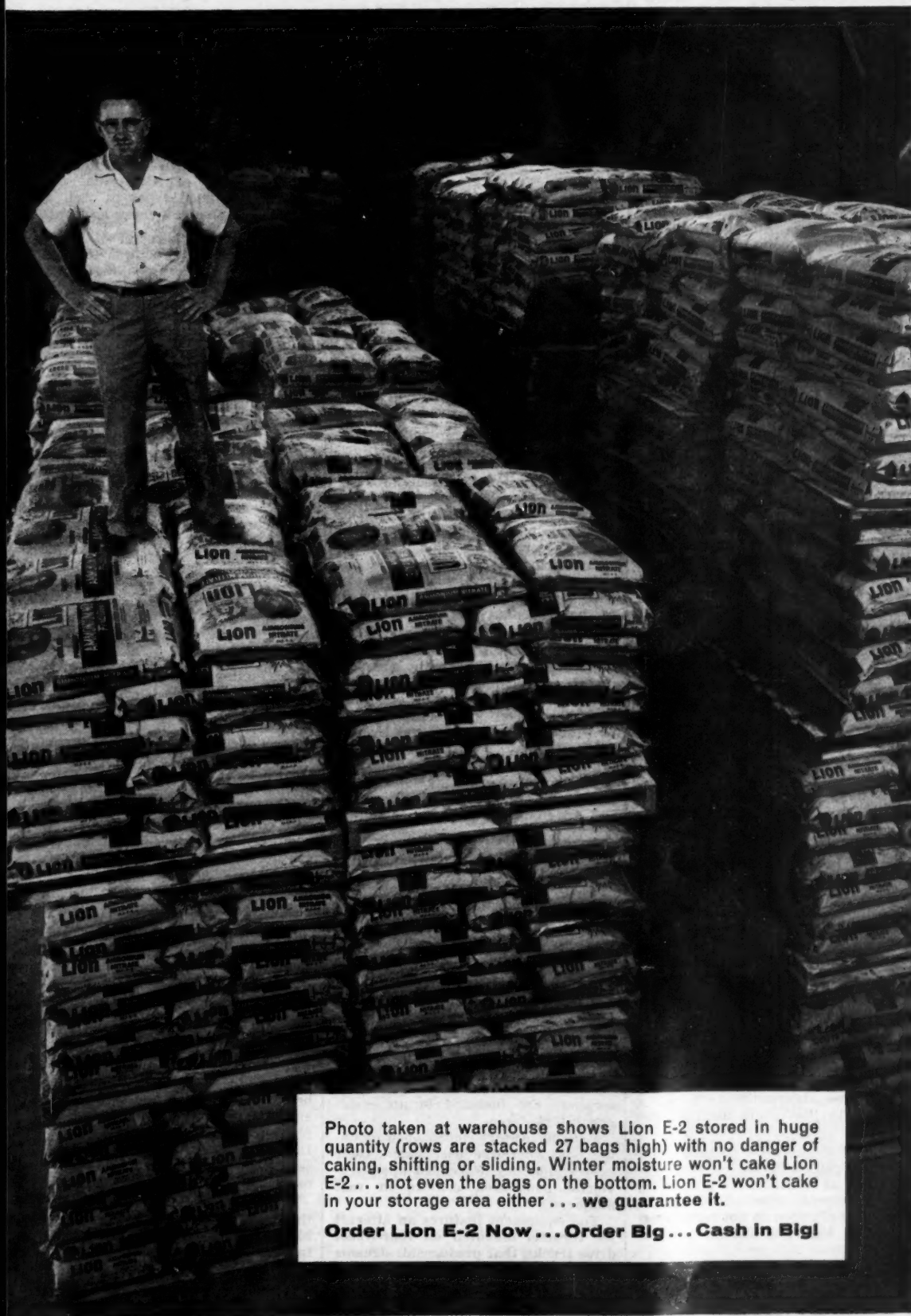


Photo taken at warehouse shows Lion E-2 stored in huge quantity (rows are stacked 27 bags high) with no danger of caking, shifting or sliding. Winter moisture won't cake Lion E-2... not even the bags on the bottom. Lion E-2 won't cake in your storage area either... we guarantee it.

Order Lion E-2 Now... Order Big... Cash in Big!



SCENES AT AUBURN—Some of those who took part in the two-day soil fertility short course held Nov. 4-5 at Auburn University and agricultural experiment station are pictured above. In the left photo (left to right) are: Dr. Fred Adams, station associate soil chemist; Ernest W. Bryant, Dolcote Quarry Co., Birmingham, Ala.; R. D. Hall, Mississippi Chemical Corp., Atmore,

Ala., and N. W. Harris, Mississippi Chemical Corp., Montgomery, Ala. In the center photo are: J. W. Bragg, Jr., Monsanto Chemical Co., Huntsville, Ala.; L. E. Cooper, manager of Roanoke Guano Co., Roanoke, and Dr. R. D. Rouse, station soil chemist. The right photo shows Frank Boyd, president, Alabama Soil Fertility Society; Dr. Howard T. Rogers, agronomy and soils department head at Auburn, and Arthur Morris, Jr., Dothan Guano Co.

AUBURN

(Continued from page 1)

many questions about soils and fertilizers.

In setting the stage for lectures about different fertilizer elements, Dr. Rogers said failure of dealers to offer the necessary services and information will mean farmers will buy directly from the manufacturer who is big enough to employ trained agronomists as salesmen.

Dr. Rogers predicted that the farmer of tomorrow will fertilize only as indicated by soil tests to take out all guessing possible in using fertilizers. The importance of this is pointed up by the fact that fertilizer costs amount to 20% of total cash farm expenditures. Despite this, he stated, 27% of Alabama fertilizer dealers who advanced credit for fertilizer did not ask whether the farmer had his soil tested.

The importance of soil texture in soil management was emphasized by Dr. J. T. Hood, associate professor of soils, at the opening session. He said that fertility of a soil can be changed relatively easily by fertilization, but texture cannot be changed readily. Therefore, management practices must be fitted to the texture because texture affects a soil's capacity to produce.

Amount of available water a soil will hold and the rate at which water enters and moves in a soil are influenced by texture. In addition, Dr. Hood pointed out, ease of cultivating is affected by soil texture. Amount and kind of clay in a soil determine in part the amount of nutrients or fertilizers that a soil can hold, the professor concluded.

In a lecture on potassium needs of soils, Dr. R. D. Rouse, soil chemist, said yields of most crops are higher when soil level of available potassium is medium or high. "For that reason, it is desirable to build or maintain potassium fertility level. This can be accomplished most efficiently by moderate annual additions rather than large single applications."

Potassium leaching losses are less when the element is applied in moderate amounts annually or biennially than when large single applications are made, Dr. Rouse explained. In addition, he continued, leaching is less when a crop is growing on the land and when the soil is not extremely acid. This points up another advantage to liming acid soils, he stated.

Dr. L. E. Ensminger, soil chemist, declared that phosphorus has been considered an essential element for over 100 years and has often been called the master key to agriculture. He said phosphates make up over half of elements used in mixed fertilizers. Proper fertilization will go a long way toward avoiding phosphorus deficiency in livestock, which is probably the most common and widespread

of all livestock mineral deficiencies, he explained.

Many Alabama soils are low in total phosphorus, Dr. Ensminger pointed out, and much of native forms of the element is unavailable. Little can be done to change availability of native phosphorus, he explained. However, he continued, phosphorus from past applications has accumulated in many soils and research has shown residual value from these accumulations. The researcher revealed that liming, rate of phosphorus application, time and frequency of application, erosion control, and moisture affect efficiency of applied phosphates.

Fineness of lime and how well it is distributed in the soil determine amount of neutralizing reaction, Dr. Fred Adams, associate soil chemist, explained to the group. Size of lime particle is especially important in soil fertility work, he pointed out, since smaller particles have more surface area to react with soil particles.

The researcher explained that even with the same pH, different soils require different amounts of lime to change pH the same amount. For example, he said, Black Belt clay soils require much more lime than would sandy soils to alter pH by the same amount. Amount of lime to change pH is greatly dependent on soil texture, type of clay and amount of organic matter, he continued.

Dr. Adams revealed that different Alabama soils varied greatly in their ability to hold nutrients. He said Alabama's Black Belt soils could hold up to 40,000 lb. per acre of calcium carbonate. This compares with 1,000 to 6,000 lb. for Coastal Plain, 3,000 to 6,000 lb. for Sand Mountain, 2,000 to 8,000 lb. for Piedmont, and 8,000 to 12,000 lb. for Tennessee Valley soils.

Boron, zinc, manganese, copper, and molybdenum are minor elements required by plants in very small amounts, Dr. John I. Wear, soil chemist, explained. He said most Alabama soils furnish enough of these minor elements for maximum plant yields, but exceptions include boron for alfalfa, clovers, and some garden crops and zinc for corn and pecans. In general, Dr. Wear stated, soils of the Limestone Valleys and Black Belt are higher in native available minor elements than are Sand Mountain and Coastal Plain soils.

Dr. C. E. Scarsbrook, soil chemist, explained that plants can utilize several forms of nitrogen in the soil. However, most nitrogen is taken up either as ammonia or nitrate, he said, and most plants can use either form equally well. Regardless of what form of nitrogen enters the plant, it is changed to the amine form by the plant.

Acidity of ammonia sources of nitrogen is caused by release of hydrogen ions as nitrification progresses, Dr. Scarsbrook revealed. Nitrate sources of nitrogen do not contain the hydrogen ions and cannot produce acidity.

The organic nitrogen fraction in the soil was discussed by Dr. A. E. Hiltbold, associate soil microbiologist.

Fertilizer Industry Told to Recognize Importance of Public Relations, Safety

WASHINGTON — Fertilizer industry management and local dealers must increasingly recognize the importance of good public relations as well as good safety practices in their areas of local operation. This opinion predominated at the recent Far West Safety School for Accident Prevention held at Fresno and attended by some 50 students from the far western states.

L. M. Roberts, general manager, Ammonia Division, Shell Chemical Corp., gave management's viewpoint, stressing that "accidents alienate customers, give a product line a bad name, and if repeated, bring unnecessarily burdensome regulations upon the industry." On the same subject, outlining the importance of safety training to local fertilizer dealers, H. S. Taylor of Agriform of California, said, "I feel that fertilizer dealers should create an atmosphere of safety among personnel to the extent that the population near their operations need never feel apprehensive."

The two-day school was sponsored jointly by the fertilizer section of the National Safety Council and the National Plant Food Institute. William C. Creel, national chairman of the council's fertilizer section, spoke on "Discovering Accident Hazards" as well as making introductions and outlining the purpose of the school to the students.

The fact that the fertilizer industry feels a moral obligation to keep the people working with chemical fertilizers well informed of the products was further brought out in a panel discussion on "Fertilizer Safety Practices for Dealers and Users," moderated by Austin Cline, Shell Chemical Corp. Among those participating on the panel were representatives of a trucking company, safety and fire fighting equipment manufac-

turers, a city chief fire marshal, as well as members of the fertilizer industry. Sidney H. Bierly, general manager of the California Fertilizer Assn., spoke on safety economics on the panel.

A comprehensive review of fertilizer industry accidents in California during 1958-59 was given by T. N. Saunders, chief, Division of Industrial Safety, State of California. Mr. Saunders outlined types as well as causes and effects of these accidents.

John E. Smith, director of safety, Spencer Chemical Co., was featured twice at the school, speaking on the plant supervisor's job in teaching safety. He showed the film "Teaching Safety on the Job" to illustrate his topic. Other industry representatives appearing on the two-day program were: Dr. Guy MacLeod, Sunland Industries, who was banquet speaker; Jack Sturgess, Collier Carbon & Chemical Corp., who outlined Collier's safety program, and G. Willis Madsen, U.S. Steel Corp., who spoke on safety attitudes.

Orm J. Chinnock, Hercules Powder Co., acted as school director, and Dr. Richard B. Bahme, NPFI western regional director, cooperated in working up program arrangements.

UREA PLANT

(Continued from page 1)

an extraction unit to supply approximately 500,000 tons per year of raw material. Specialized units, supplied by the German firm of Pintsch Barmag, under a separate agreement, will be installed to handle drying and treatment of the lignite, its transformation into gas, and final purification. Another agreement with Linde will cover the installation for the fractional distillation of the air and gas for the gas synthesis mixture. The Neyvelli installation will use the Montecatini process to produce 300 tons a day of anhydrous ammonia.

Construction of a thermoelectric power plant, research laboratories, work-shops and auxiliary service units, including a plant for packaging and handling the finished products, will make the Neyvelli installation a completely integrated and self-sufficient operation.

According to the agreement signed recently in Madras, provisions have been made for the Indian engineers and technicians who will operate the plant to undergo training periods in Italy and Germany to acquaint themselves with the equipment and processes involved.

More than 30 plants located around the world now employ the Fauser-Montecatini process for urea manufacture including one presently on stream at Sindri, India, in the state of Bihar, which also produces a complete line of nitrogen chemicals.

BATTLE SCORPIONS

RENO, NEV. — Special turbine sprayers and dusters which have been used successfully in state agricultural and forestry operations are being rushed to the scene of the Mexican hurricane disaster to battle hordes of scorpions and tarantulas which threaten thousands of survivors, it has been reported.

Tom Hemphill, vice president of Pacific Associates, a Palm Springs firm which distributes the specialized equipment, said at least 50 of the sprayers are included in an emergency task force.

Raging waters ripped open mountainsides where the insects made their homes and they descended upon provincial population centers in vast numbers.

The equipment features an aircraft jet turbine, mounted on four-wheel drive trucks, that produces air streams up to 180 m.p.h. to spread the insecticides.

'Service to All' Is Washington Firm's Guide to Big Success

By J. I. SWEDBERG
Croplife Special Writer

When J. F. Williamson, manager of the Grange Supply Co., listed his initials as "J. F." in the phone book nobody knew who was meant. So he changed it to "Jack"—then everybody knew. The incident indicates the good will that is so helpful to him in the conduct of his business.

The Grange Supply Co., located at Pullman, Wash., has a \$500,000 annual gross, including fertilizers, chemicals, petroleum and equipment.

The guiding philosophy in the conduct of this business according to Mr. Williamson, "is based on service, and we are here to render service to all."

Although service is the top requisite for success, Mr. Williamson also lists others.

They are: (1) product knowledge, there is no substitute for testing; (2) customer contacts; (3) equal treatment to all; (4) expanding the lines; (5) maintaining a good reputation; (6) keeping abreast of the field.

Regarding service, Mr. Williamson thinks that if a man has trouble, help him; if he needs repairs for an old machine, get them, and take care of special items. It includes, also, keeping track of warranty service, and furnishing information.

"We have a reputation to uphold and our suppliers are all reputable firms. We must have customer good will so we agree with him when we can and he likes it because it bolsters his ego."

Mr. Williamson has a definite credit policy that pays off. The last time an account was written off was three years ago.

"To get credit our customers must be cleared with the Credit Bureau. It costs us \$75 a year but we save 10 times that much."

The company will grant credit up

to 90 days; after that interest is charged at 8%. "Our accounts are very good," he says. "Some farmers don't have money every month but will pay at least twice a year. We do as much for them as we can and if they show an inclination to help themselves, we are not rough."

The Grange Supply Co. advertising bill runs to \$95 a month and the advertising is carried through newspapers and radio. "Our radio advertising is tied up with a daily weather program, six days a week," says Mr. Williamson.

Educational programs include the annual stockholders' meeting, printed material, extension meetings and personal contacts.

"We advise farmers to attend meetings held by the extension service. They will attend when the topic is of interest to them," he says.

"There is an abundance of well written material in pamphlets," Mr. Williamson says. "Most farmers will ask for it, take it home and look it over."

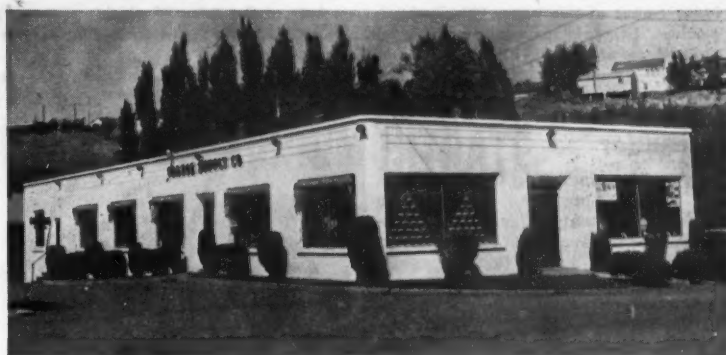
"Farmers generally take our recommendations, and we in turn rely on the tests conducted by our suppliers."

"The chemical salesman must know about the product, otherwise he will do the farmer an injustice, and possibly lose a customer."

Education extends to employee training, too, at Grange Supply. "We personally train our new men and it takes 12 months to properly educate a man in this type of business. He continues learning for 2-4 years."

Sales persons who know their product are very important, says Mr. Williamson, adding that "if you don't know you had better tell the farmer you don't know."

Learning the needs of the area is part of the program. "To do this there is no substitute for going out among the farmers, they know what is going on and we rely on their ad-



A NEAT, ATTRACTIVE AND CLEAN building and display area is a must for the Grange Supply Co. of Pullman, Wash. According to the manager, J. F. Williamson, it is only logical to keep the appearance up to date.

vice. We do not mail question sheets, the returns are not very good," he says.

"Product testing by the distributors and the nearby university is a help to us."

In the Grange Supply trade area, wheat is the most important crop, so an ample supply of insecticides, herbicides and seed treatments is necessary.

The firm has a standard procedure for introducing new products. "First we go to the distributor to get the test results, and if they are good, we buy initial stock in small amounts. Farmers will usually buy new products in gallon lots, increasing the order if results are good. We follow up on the farmers' results at the end of the year and if they are satisfactory we expand the following year. On good products it takes two to five years to expand sales," says Mr. Williamson.

The firm's chemical business adds up to \$50,000 annually.

Equipment sold, amounting to \$5,000 to \$10,000 a year, includes boom-type sprayers, spray tanks, hoses, and fittings and nozzles.

On the fire at present are plans for a helicopter spraying service. A start has been made but the problems of wind and other weather conditions have not been resolved as yet.

"Flying spray materials has two advantages," according to Mr. Wil-

lamson, "speed and the ability to carry on when the ground is too wet for surface equipment."

"Here is how our plan will work: The company acquires the business for the spray operator and receives 10¢ an acre as our commission. The service is arranged for the farmer who buys his material from us. We profit from the sales of materials, as well as the spraying commission."

Spraying sales will probably increase, says Mr. Williamson, who points out that a helicopter is an expensive piece of equipment, about \$35,000. The spraying charge will be about \$1.25 an acre.

"We are informed that a helicopter should earn over \$100 an hour to operate profitably," he says.

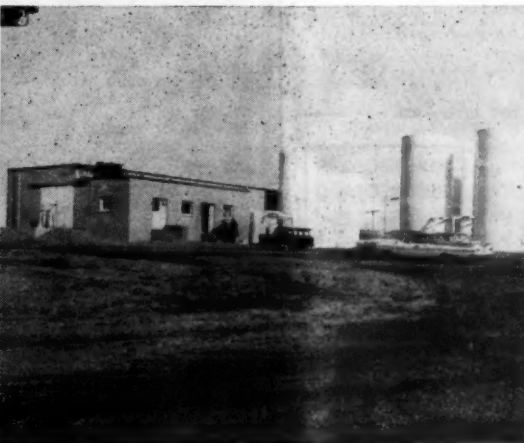
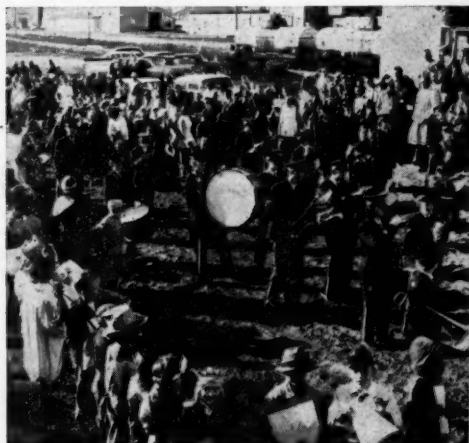
The future of aerial spraying looks good, Mr. Williamson feels, and to date no other type of service in spraying has been furnished by Grange Supply.

Estimating merchandising needs for the coming year revolves around an up-to-date inventory kept on a card. The card is a record of material sales, and Mr. Williamson's orders are based on it. "It comes pretty close," he says.

There will be tremendous advances in the chemical industry the next 10 years, says Mr. Williamson, and the chemical dealer will have to keep abreast of the times and expand or

(Turn to SERVICE, page 14)

Iowa Town Aids in Successful Fertilizer Plant Opening



THE TOWNSPEOPLE of Sanborn, Iowa, turned out enthusiastically and in considerable numbers to help Ris-Van, Inc., open its new liquid fertilizer plant in that community. The photo at left shows a portion of the group that followed the local high school band and a long line of kiddies dressed up in Halloween costumes through the streets and up to the new plant. The event took place on Oct. 31, and the Halloween tie-in was natural. The center photo shows the new Ris-Van plant, the fourth to be erected by the company in

the last five years. The photo at right contains some of the children in their amusing costumes. In addition, the opening was highlighted by a soup and cracker spread, prepared by local housewives; speeches by politicians and Ris-Van officials, and favors for the kiddies and the ladies. Flowers and congratulation bouquets from other businesses in Sanborn were prominently on display throughout the plant.

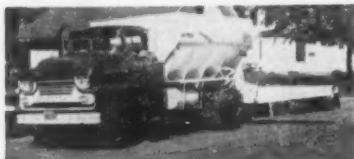
WHAT'S NEW

IN PRODUCTS · SERVICES · LITERATURE

To obtain more information about items mentioned in this department simply: (1) Clip out the entire coupon in the lower corner of this page. (2) Circle the numbers of the items of which you want more information. Fill in the name and address portions. (3) Fold the coupon double with the return address portion on the outside and fasten the edges with a staple, cellophane tape or glue. (4) Drop in the mail box.

No. 6983—Fertilizer Spreader

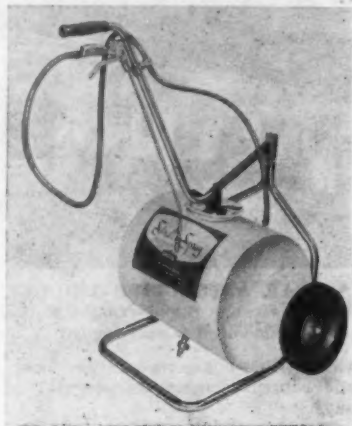
Tyler Manufacturing Co. announces the Tyler Spreader, designed to spread high analysis fertilizer accurately down to as low as 50 lb. an acre. The unit has a fast engaging, wheel driven stainless steel conveyor that allows free shifting of truck transmission and two speed axle without affecting the rate of appli-



cation. A hydraulically driven distributor is governed for constant speed regardless of truck engine speed. It has slot type compartment hinges, no bolts and no holes in the body for fertilizer to leak out or moisture to seep in, company literature said. An angled metering gate reduces compacting of material and increases conveyor chain life, the company says. For more information, check No. 6983 on the coupon and mail.

No. 6984—Hand Pumped Sprayer

Announcement of a 6 gal. capacity sprayer, No. 1706 in the "Stroll'n Spray" series, was made by Universal Metal Products Co., division of Air Control Products, Inc. According to the company, the 6 gal. sprayer

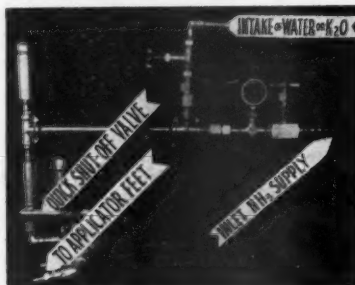


has the largest capacity of any hand pumped, pressure type sprayer. The unit has large, rubber-tired wheels and the towing handle is designed so that it is also the pumping handle. The long leverage of the handle makes it easy to build and hold pressure in the sprayer, the company says. A special release valve prevents the build-up of excess pressure. Another feature is a liquid applicator built into the tank. The applicator throws a fan shaped pattern behind the sprayer. For more information, check No. 6984 on the coupon and mail.

No. 6982—Liquid Fertilizer Controls

A device for fingertip control of liquid fertilization under pressure has been announced by Flo-Mix Fer-

tilizers Corp. Called the "Brain Center," the unit converts anhydrous ammonia into aqua ammonia or combines with a potash solution to form ammonium potash, the company says. The unit is of stainless steel construction and consists of mixing chambers, valves, pressure gauge and tubes. The tubes connect by a series of hoses to the ammonia and water tanks and to nozzles which spray the liquid fertilizer into tiny furrows made by small blades. It can be installed on any type of farm tractor



and gives the driver instant control over the ratio of mixture and rate of flow of aqua ammonia or ammonium potash, company literature said. For details, check No. 6982 on the coupon and mail.

Also Available

The following items have appeared in previous issues of Croplife. They are reprinted to help keep dealers on the regional circulation plan informed of "What's New."

No. 6981—Sprayer Unit

Hanson Equipment Co. announces the "Trak-Pak" sprayer unit. The unit mounts on any standard three-point hydraulic hitch. The unit can be equipped with either a boom or



Brodjet sprayer. A universal-joint drive shaft from the tractor power-take-off powers the pump-agitator assembly. An all-welded steel frame supports the tank, pump and sprayer unit. When not in use, the unit rests on its built-in skid stand, the company says. For more details, check No. 6981 on the coupon and mail.

No. 6978—Heavy-Duty Liner

A heavy-duty liner made of chemically resistant material has been announced by Protective Lining Corp. The liner, predominantly for 55 gal. size, has a specially constructed round

bottom to fit the standard steel drum neatly, the company says. The liner has a temperature range of from -25° to 230° F. It is chemically resistant to most chemicals, except very heavy acids in concentrated form, the company says. For more information, check No. 6978 on the coupon and mail.

No. 6976—Insect Control Machine

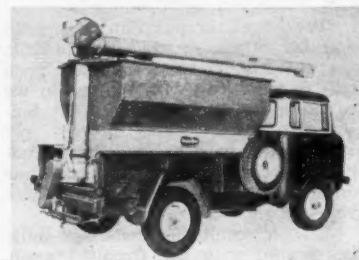
An all-purpose insect control machine that can be used for air-blast spraying, high volume spraying with a hose, dusting or pellet broadcasting, has been announced by Besler Corp. The machine has a 35 in. axial-flow type blower. The motor is 56 h.p., Wisconsin air-cooled. Other features include adjustable vanes in the volutes that direct columns of insecticide-filled air. A provision is made for a



small spray boom to cover the area directly under the machine when it is used for spraying row crops, the company said. For more information, check No. 6976 on the coupon and mail to this publication.

No. 6980—Bulk Delivery Unit

Bulk delivery of fertilizer with any type of truck is possible with auger-equipped truck bodies being offered by Knedler Manufacturers, company literature stated. The galvanized steel body is available with weather-tight cover, sack hauling space and a hydraulically operated boom auger to reach storage facilities. Basic models



are the 12 ft. and 8 ft. lengths, with top box extensions increasing the capacity of each so that the actual range of sizes is 2, 2½, 3, 4 and 5 tons. Twin compartments permit hauling different types of fertilizers, the company says. A "guillotine" shut-off system is available to allow either compartment to be unloaded at any time. More information is available by checking No. 6980 on the coupon and mailing.

No. 6979—Dryer Bulletin

General American Transportation Corp. announces the availability of Bulletin 59-L pertaining to rotary drying equipment. The bulletin contains sections on selecting dryer types, construction, counter-current dryers, parallel-current dryers, indirect-heat dryers, return-current dryers and many other types. A section also deals with other rotary equipment. For copies of the bulletin, check No. 6979 on the coupon and mail.

No. 6977—Fork Truck Attachment

Vac-U-Lift division of the Siegler Corp. announces a fork truck attachment utilizing vacuum for handling of barrels, plate, sheet or stone. The at-

Send me information on the items marked:

- | | |
|--|--|
| <input type="checkbox"/> No. 6973—Liquid Fertilizer Spreader | <input type="checkbox"/> No. 6979—Dryer Bulletin |
| <input type="checkbox"/> No. 6974—Urea Fact Sheet | <input type="checkbox"/> No. 6980—Bulk Delivery Unit |
| <input type="checkbox"/> No. 6975—Marking Ink | <input type="checkbox"/> No. 6981—Sprayer Unit |
| <input type="checkbox"/> No. 6976—Insect Control Machine | <input type="checkbox"/> No. 6982—Liquid Fertilizer Controls |
| <input type="checkbox"/> No. 6977—Fork Truck Attachment | <input type="checkbox"/> No. 6983—Fertilizer Spreader |
| <input type="checkbox"/> No. 6978—Heavy-Duty Liner | <input type="checkbox"/> No. 6984—Hand Pumped Sprayer |

(PLEASE PRINT OR TYPE)

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COMPANY

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tachment is entirely self-contained, the company says, with four 10 in. Vac-U-Lift pads mounted directly to the frame which slips onto the forks of the truck. The pads are adjustable from 19 in. to 29 in. the long way of the fork and from 20 in. to 28 in. between the forks. Lifting capacity of each pad is 500 lb. with a total capacity of 2,000 lb. Power is furnished by a gasoline engine which drives the vacuum pump and contains its own reserve vacuum system to assure safety in the event of engine failure, the company says. The pendant control panel is in easy access to the operator. For more information, check No. 6977 on the coupon and mail.

No. 6975—Marking Ink

Ink in spray cans for stenciling steel drums and other containers has been announced by Reynolds Ink, Inc. The inks are available in nine colors, dry almost instantly and are weather



and waterproof, the company says. The inks are not limited to stenciling steel drums, but can be used for stenciling containers of every sort and for color coding and identification marking, the company says. For more information, check No. 6975 on the coupon and mail.

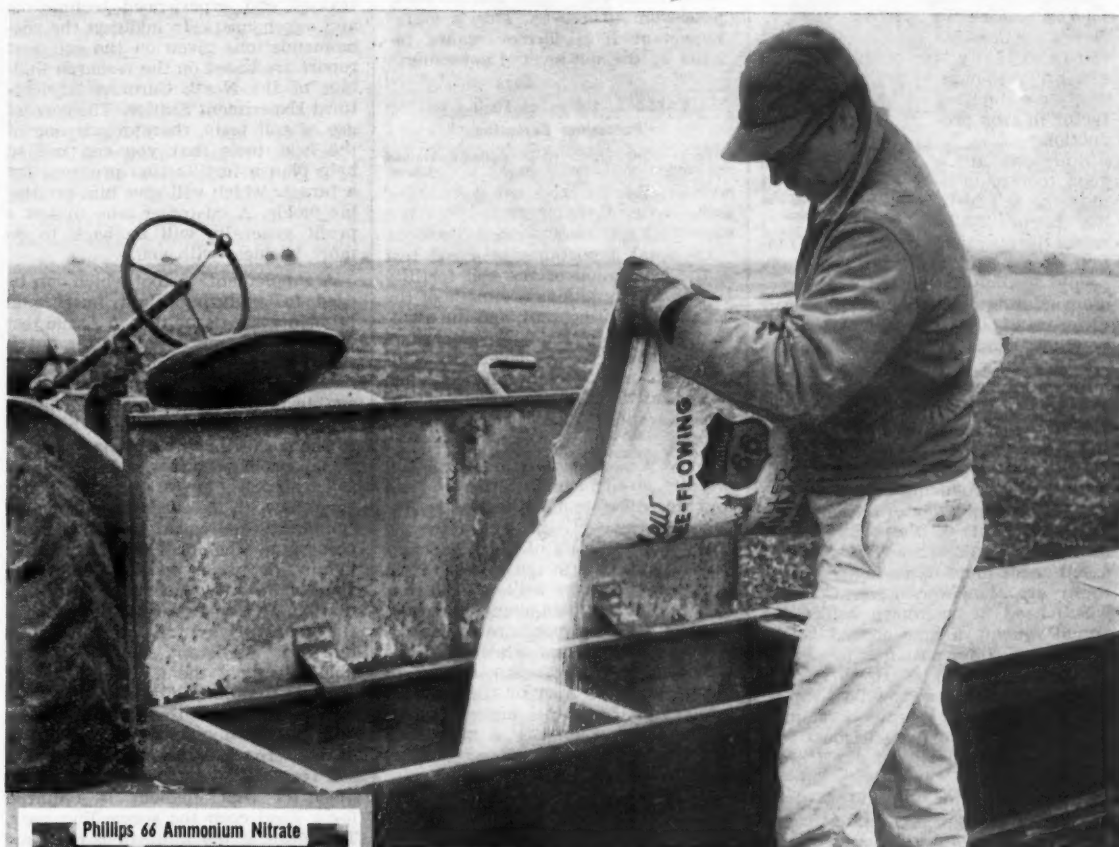
No. 6974—Urea Fact Sheet

The chemicals division of Olin Mathieson Chemical Corp. has published a four-page fact sheet on Mathieson urea. The brochure shows the availability of the product in the East through the firm's North Claymont, Del., plant and also points up engineering improvements designed to produce highest grade prilled and crystalline urea, the company says. The urea will be produced by SunOlin Chemical Co., jointly owned by Sun Oil Co. and Olin Mathieson. Copies of the fact sheet and further information can be obtained by checking No. 6974 on the coupon and mailing to this publication.

No. 6973—Liquid Fertilizer Spreader

The John Blue Co., Inc., announces the "Nitro-Shooter Dual Purpose Series 80" liquid fertilizer spreaders. The unit comes equipped for simultaneous application of anhydrous ammonia and phosphoric acid. The machine may be equipped with either a standard 14 ft. tool bar or a 21 ft. tool bar, for six row application. The machine is pictured with 200 gal. ammonia tank, 100 gal. phosphoric acid tank and variable stroke metering pumps for both anhydrous ammonia and phosphoric acid. The ammonia pump is of new design which permits it to meter accurately 200 to 6,000 lb. of ammonia per hour, the company says. For more information, check No. 6973 on the coupon and mail.

PHILLIPS 66 ads like this appear regularly.
in **CAPPER'S FARMER**, **PROGRESSIVE FARMER**, **FARM JOURNAL**,
FARMER-STOCKMAN and **FARM and RANCH** . . . part of a
continuing program to help dealers sell more mixed fertilizers
and **PHILLIPS 66 AMMONIUM NITRATE**.



Buy it Now... It's Guaranteed to Flow Later

Buy next year's supply of Phillips 66 Ammonium Nitrate now, before the end of the year! Some farmers do it for tax reasons, others because it's one less thing to worry about during the rush of spring work. Buying now assures you of having Phillips 66 Ammonium Nitrate when you need it. Whatever the reason, all agree that early buying is practical when it's Phillips 66 Ammonium Nitrate. It's *guaranteed* to flow freely when stored and applied in a normal manner, or it will be replaced immediately at no extra expense to you.

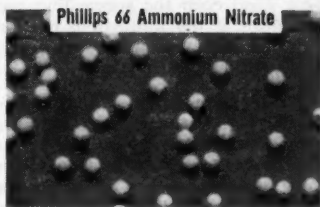
The next time you "talk fertilizer" with your dealer, get him to show you a sample of Phillips 66 Ammonium Nitrate. Take a handful and let it run through your fingers. Right away you will see that prills made by Phillips exclusive, electronically controlled process are different. They are *all* uniformly round, hard, and dry.

When you place your next order . . . specify Phillips 66 Ammonium Nitrate. It costs no more. Yet, it gives you these big "extras"—the assurance of safe storage, even application, more uniform crop response.

"A good name to grow by"



Phillips 66 Ammonium Nitrate



Ordinary Ammonium Nitrate



Both products shown 2 times actual size

Proof of Performance

These unretouched photos tell the story. The uniformly round, hard prills of Phillips 66 Ammonium Nitrate flow freely . . . do not cake or clog in the applicator . . . no skipping or bridging. Pre-plant, side dress, top dress or plow down, this premium fertilizer gives your crops a full 33.5% nitrogen. Half is fast-acting nitrate nitrogen and half is long-lasting ammonia nitrogen. This gives crops a good start and sustained feeding up to maturity, for higher yielding, more profitable harvests.

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Some Successful Agronomic Selling Tools*

By EUGENE J. KAMPRATH

Director, Soil Testing Division
North Carolina Department of Agriculture

The sale of cash crops provides approximately two-thirds of the agricultural income in North Carolina. In addition a large acreage of pastures and grain crops are grown to supply feed for the livestock raised. Therefore, the production of crops is a very important part of the agricultural program. Efficient production is the key to a profitable enterprise.

The yields of crops are dependent upon several factors which can be shown by the following equation:

$$\text{yield} = f(\text{crop, soil, climate, management})$$

All of these factors are important and for efficient production they must be supplied at an optimum level. Our primary interest is to see how one can evaluate the soil factor since in North Carolina soil fertility is generally the number one limiting factor in crop production.

Soil tests are a good tool to evaluate the soil fertility factor. This raises the question just what information does a soil test provide? Many people are only interested in the recommendation for lime and fertilizer given in a soil test report. Attention, however, needs to be focused to the actual results of the test which give information about the lime status and soil fertility level. These items give the farmer an inventory of his soil resources. Without this information he cannot hope to do an efficient job of producing crops.

A soil test gives information about the lime status of the soil. The pH of the soil indicates whether or not a soil needs lime. If a soil needs lime there are, however, several things which need to be known before the actual amount of lime needed can be determined. Information is needed as to which crop is to be grown. The pH level at which crops grow best varies. Legumes generally grow best at a pH range of 6.5 to 7, while most row crops do satisfactorily at a pH of 6. The amount of lime required to change the pH of the soil a given unit depends upon the buffer capacity of the soil or the amount of calcium the soil can hold. The organic matter content and the texture of the soil are a measure of the buffer capacity of a soil. Therefore in making a lime recommendation the following information is needed; the crop to be grown, the pH, the organic matter content, and the texture of the soil.

Just what benefits are obtained by having a soil properly limed? These can be listed as follows: liming neutralizes soil acids and substances toxic to plants; provides calcium and magnesium, two essential elements for plant growth; im-

proves environment for soil bacteria, and results in more efficient use of other nutrients. The effect of liming an acid soil on the growth of plants is shown by the increased yield of alfalfa (Table 1). Also of

TABLE 1. Response of Alfalfa to Lime on a Cecil Soil
(3-Year Average)

Treatment	Yield ton/acre
None (pH 5)	0.5
Lime—	
Surface application	1.7
Mixed—plow zone	2.7

importance is the thorough mixing of the lime throughout the plow layer. Often overlooked as a benefit of liming is the effect on the more efficient use of other plant nutrients. This is well illustrated by the effect of liming on the increased capacity of a soil to hold potassium (Table 2). This is quite important if a farmer wants to build up the soil level of potassium.

TABLE 2. Effect of Liming on Potassium Retention

Soil	% of applied K retained	% of applied K retained
	Acid	Limed
Norfolk	22	57
Cecil	58	90

Of equal importance in a soil test is the evaluation of the soil fertility level. Determinations are made of the organic matter content, and the available amounts of calcium, potassium, and phosphorus. The levels of available nutrients are generally classified as low, medium, high, etc. The meanings of these terms are given in Table 3.

What does an evaluation of the soil fertility level mean in terms of yield and response to fertilization? This can be very well illustrated by the results of a series of corn fertilization experiments in the Coastal Plain area. As shown in Table 4 soils low in potassium gave an average increase in yield of 26 bu. per acre to the addition of potassium, while the soils testing high only gave an increase of 3 bu. per acre. Also of considerable interest is that the highest yields were on the soils with a high level of fertility.

An analysis of the above data as far as the cost of production and profit per bushel of corn shows the importance of knowing the fertility level of the soil in order to obtain efficient production (Table 5). Even though 60 bu. of corn were produced the profit realized can be very small if one item such as potassium is not furnished. Proper fertilization resulted in a decrease in the cost of production and a greater profit per bushel of corn. It should be pointed out that the

lowest cost of production per unit was at the high level of fertility. Even though no significant response was obtained to the addition of potassium it is necessary to apply a small amount to maintain the soil level.

These data clearly show that if a farmer wants to produce crops most efficiently he needs to have information about the lime status and soil fertility level of his soil. By taking soil samples for a farmer you can get the information you need in order to supply him with the right amount of plant nutrients. Farmers generally have confidence in the results of a soil test and the fertilizer recommendations if they know the tests have been made by a competent and impartial laboratory. Naturally it is our opinion that the soil testing division of the Department of Agriculture is such a laboratory since it has trained and experienced technicians and agronomists. In addition the recommendations given on the soil test report are based on the research findings of the North Carolina Agricultural Experiment Station. The correct use of soil tests, therefore, is one of the best tools that you can use to help plan a fertilization program for a farmer which will give him profitable yields. A customer who makes a profit generally will be back to do more business with you.

A supplementary tool which can be used in analyzing plant nutritional problems is a tissue test. A tissue test will give information about the nutritional status of the plant at the moment, but not for anytime later. Tissue tests are not a tool which can replace a soil test but can be used to show a farmer that he has a nutritional problem and should have his soil tested. These tests can also prove very helpful in verifying deficiency symptoms of nitrogen, phosphorus and potassium. The ideal time to sample plants for tissue tests is about the time of flowering and early seed formation. During this time plants have the greatest need for plant nutrients, and it is important that the soil be able to supply them. Generally it is too late to do anything about correcting a deficiency at this time. However, once the limiting factor in the growth of the crop has been determined a soil test can be made to indicate how much of that element is required for a good crop the succeeding year. Therefore, if the limitations of tissue tests are understood they can serve as a good diagnostic tool.

Often farmers may be reluctant to use high rates of fertilization or new fertilization practices. A demonstration of these things is a very effective means of persuading the farmer to adopt them. Demonstrations need to be carefully planned so that all other factors

necessary for growth are adequately supplied. It is a good idea to plan your demonstrations in cooperation with the county agricultural agent. Fertilizer demonstrations should be planned on the basis of information obtained from a soil test. Simple demonstrations showing the response of a crop to proper liming and fertilization are often the best advertising one can do.

By placing demonstrations near a well traveled road and having a sign to describe what is being demonstrated a large number of people will observe it. Quite often it is impossible to see any visual difference in the growth of plants. For this reason it is a good idea to get accurate yield measurements to see if any differences exist. Good demonstrations are a good tool to show a farmer how he can increase his yields by proper liming and fertilization.

Each year the research conducted by the North Carolina Agricultural Experiment Station adds more information to our storehouse of knowledge about fertilization. This information is made available by the Experiment Station and the Extension Service through the publication of bulletins, circulars, pamphlets, and news releases. All of these are available by anyone who desires them. In order to do a good job it is necessary that one keep up to date. A person who is well informed about the use of soil tests, the benefit of proper liming and fertilization should have no trouble in selling plant nutrients to farmers.

Trade Winds From California

LEMOORE, CAL.—J. P. Harlan has joined with R. D., M. A. and J. J. Sponsler to found the Sponsler Lemoore Nursery at 10965 Eighteenth Ave., in Lemoore.

CASTRO VALLEY, CAL.—The Bill Jory Nursery is newly incorporated at 3826 Castro Valley Blvd., here. And the Holiday Nursery is a new competitor, owned by Zulsa G. O'Reilly and located at 20735 Lake Chabot Rd., Castro Valley.

NOVATO, CAL.—Mary Armas has been granted a permit to open a nursery on Novato Blvd. and Clay Rd. here.

GUSTINE, CAL.—A. J. Moffet and Robert, Harold and Ralph D. Moffet have incorporated at half a million dollars the A. J. Moffet and Sons Nursery in Gustine.

SANTA ROSA, CAL.—Elsie O. Tershly is opening the Farmers Exchange Nursery at 5230 Redwood Highway North in Santa Rosa.

HILMAR, CAL.—A new wholesale nursery is located on East Bloss Ave., in Hilmar under the name of Nursette, and owned by James H. Hembree.

SANTA CLARA, CAL.—The Western Garden Distributors, offering various kinds of garden supplies, has been incorporated here. Mary S. Hayes, Loretta C. Hayes and Robert E. Hayes are the principal shareholders.

FRESNO, CAL.—Irola's Nursery in Fresno has been sold by Bert Irola, Jr., to G. C. Oliver, M. L. Dudley and Marie Kilpatrick. The store is located at 3304 North Van Ness Blvd.

*Talk presented at the Fertilizer Salesmen's School held at North Carolina State College, Raleigh, N.C., Sept. 4, 1959.

what's NEW?

Broyhill PLASTI-CHEM
CRUSADER "220"
Sprayer with PLASTI-CHEM tank.

Lined Tanks resist corrosion of chemicals and liquid fertilizers.

Ideal for applying corrosive chemicals.

Nurse Tanks in 500 and 1,000 gal. sizes available.

Write to: the Broyhill COMPANY DAKOTA CITY, NEBRASKA

TABLE 3. Meaning of Low, Medium, and High as Used on a Soil Test Report

	Low	Medium	High
Amount of nutrient in the soil available to the growing crop	More than 90% of the time	About 50% of the time	Less than 10% of the time
Average chance of a profitable response to fertilization	More than 90% of the time	About 50% of the time	Less than 10% of the time

TABLE 4. Average Response of Corn to Potassium Fertilization at Two Soil K Levels in the Coastal Plain

Soil K level	No. of locations	Yield bu./acre—+K	Yield bu./acre—K	Average response bu./acre
Low	15	84	60	24
High	6	97	94	3

TABLE 5. Average Cost of Production and Profit per Bushel of Corn

Soil K level	K ₂ O added lb./acre	Cost per bushel	Profit per bushel at \$1/bushel
Low	0	0.94	0.06
	40	0.70	0.30
High	0	0.60	0.40
	20	0.61	0.39
	40	0.61	0.39

SCHOENFELD AND MCGILLISUDDY



OSCAR & PAT

By AL P. NELSON

When balding, pudgy Oscar Schoenfeld came home for lunch that Friday noon, his wife Minnie was very nervous, but Oscar didn't seem to notice it. As usual he was preoccupied, all wrapped up in a little world of his own, which was mainly one of discounts and cost reduction and savings.

"Ach, Minnie," he said as he unfolded his napkin in a precise manner and placed it across his knees, "you shouldnt know how crazy people are gettink nowadays. Always spendink, spendink. At the bank Bernard Bramsten was tellink me how many automobiles, andt appliances we are repossessink. They can't pay for them, but yet they buy and buy and buy. That is what is wrong with this country. They are all like—like that Irisher partner of mine."

"But it is good business for the bank, isn't it?" Minnie asked timidly. "To take things back that ain't paid for. You can sell them again. And you are a stockholder in the bank."

"Ach, sure I am a stockholder," grumbled Oscar through his liver and rye sandwich. "But why don't people safe like us, so they got something for a rainy day?"

"Mrs. Gruber says we don't have to save for a rainy day anymore," Minnie suggested weakly. "She says everybody has got pensions, or social security and if that isn't enough in old age the government can pay the rest. She says wise people today live it up. What does that mean, Oscar?"

Oscar's face got purple. "Such foolishness, Minnie. Lif it up means that people spendt every cent they earn and all they can borrow."

"Then if they can't pay they let somebody else worry. Don't talk to me about lif it up, I hear so much of it I get sick to my stomach. Aren't there any honest people anymore, those that skimp andt safe? They are the ones that built this country. They dit all right. They didn't go aroundt spendink money like they was crazy."

Minnie smiled a quick, uneasy smile. "Oscar," she said timidly, "I got some free tickets for the big smorgasbord at the Lutheran Church Tuesday night."

Oscar frowned and folded his napkin. "Minnie!" he said gruffly, "don't be foolish. Nobody gets anything free in this worldt. You only think you do."

"Well," Minnie conceded, "I only had to give a half bushel of tomatoes to Mrs. Schmiegel for these two tickets. She bought the tickets a week ago and now she and Walter have to go out of town to a funeral. She wanted cash, but I said all I could give was a half bushel of tomatoes."

Oscar frowned. "Ach, I hope you put a few of those big green ones in, too."

"A few," Minnie admitted. "She can make chow-chow out of them. And they have such good food at the smorgasbord."

"Well," said Oscar practically, "we can skip the noon meal so we can eat plenty at the smorgasbord. We haf to get our money's worth."

Thus it was that Oscar and Minnie went to the church smorgasbord the following Tuesday night. Even though they hurried, the line-up was long, and Oscar found himself standing right behind tall Ken Burkhard, a farmer.

"Hi, Oscar," grinned tanned Burkhard. "You're early, too. Mrs. Schoenfeld, how in the world did you get Oscar to part with \$3 for this smorgasbord? I thought all Oscar's money had moss on it."

Oscar's face was stern. "Ach, I still got it, and some others I know ain't got it."

Ken Burkhard flushed, for he knew Oscar's remark was directed at him. As a stockholder in the bank, Oscar knew Burkhard was quite heavily mortgaged and he also took his time paying fertilizer and feed bills. "Oh, you gotta live a little, Oscar," he chided. "No use saving it all for somebody else to blow in after you're gone."

"Some ain't got none to leave," Oscar growled, his eyes on the food table ahead.

Burkhard chuckled, and poked his lanky wife ahead of him.

"By golly," he said, "ain't Oscar the limit? He oughta be state treasurer. Then maybe our taxes would come down."

"Blower!" Oscar whispered to Minnie, and luckily Burkhard didn't hear.

When Oscar and Minnie got their trays loaded, they hurried to a table and sat down. Burkhard and his wife stood, trays in hand, visiting with some people seated at another table. Then seats everywhere seemed to fill up and the Burkhard's sat down right across the table from Oscar and Minnie.

"Gee, whiz," Burkhard said, as Oscar got up with his empty tray. "Goin' for another helping already? You eat faster'n you figure discounts."

Soon Oscar was back with a heaped plate—baked beans, potato salad, jello salad, cabbage slaw, cold ham, some turkey, coffee and pumpkin pie. Without a word he began to do justice to the meal.

"I sure wish you'd give us extra helpings like that on fertilizer when we come to buy," Burkhard chided. "Then your business would boom."

"We gif plenty," Oscar snapped, his mouth full of potato salad. "Ach, and we don't get paidt so quick for what we gif. We shouldt charge 10% interest after 30 days."

"You charge 10% on accounts after 30 days, and your place would be as lonesome as a graveyard at three o'clock in the morning," Burkhard predicted. "Haven't you ever heard that the customer is king in any retail store?"

"Ach, he ain't king on my money," Oscar growled. "Let him be king on his own."

At this point Oscar got up to get another helping, but Minnie pulled his leg. "Oscar, not again," she whispered. "What will people think?"

"We got tickets, ain't we?" Oscar said. "We want our money's worth. I'm hungry."

As Oscar left Mrs. Burkhard, a thin, tall woman said, "How many years have you two been married?" There was a curious note in her voice.

"Sixteen years," Minnie replied. "We was marriedt young."

"Well, what do you know," Mrs. Burkhard said, as she pinched her husband's leg.

On the way home, Oscar belched quite a bit. "That Burkhard, he's an awful blower!" he said. "Talk, talk, talk, all the time. Always he's gonna do this, or do that. Ach, and he neffer gets much done and he

can't pay his bills." He belched again.

"Oscar," said Minnie, "maybe you shouldn't have eaten so much. Are you sick?"

"No, I am not sick. We hadt to get our money's worth, didn't we?"

At home Oscar lay down on the couch. "Mine liver, Minnie," he complained, "it doesn't feel so goot."

FARM SERVICE DATA

EXTENSION SERVICE REPORTS

Commercial fertilizers used either to correct plant food deficiencies or to increase the level of soil fertility serve to build up the nutritive value of crops, according to the California Fertilizer Assn.

The growing crop cannot tell whether the plant food elements which it takes up from the soil or through its leaves originated as a chemical or an organic material, the association said. This is substantiated in the findings of a great many university and U.S. Department of Agriculture research people.

According to Dr. Oscar A. Lorenz, vice chairman, department of vegetable crops, University of California, "People who believe that chemical fertilizers poison the soil, create unfavorable soil conditions, and damage the health of humans and livestock who eat plants grown with the chemical nutrients, are incorrect."

"Actually organic matter has no magical or unique properties so far as plant nutrition is concerned. So long as a plant gets the nutrients it needs, it doesn't know or care what the original source is. Organic nitrogen must first be changed to the inorganic before plants can use it. Practically all of the nitrogen is absorbed by plants in either the nitrate or ammoniacal forms."

"Experiments under way for over 100 years in England have shown almost identical yields from plots fertilized organically and chemically. This proves that chemical fertilizers can have no serious deleterious effects on soils. Animal feeding tests have proved that chemical-grown plants are as nutritious as those grown in organic materials."

Dr. Lorenz pointed out that in countries where chemicals have been widely used in crop production, such as the U.S., Sweden and Denmark, the people have high average longevity. He pointed out that this would not be so if chemical fertilizer were poisoning the crops or the soils concerned.

The association agrees with another statement of Dr. Lorenz to the effect that "organic matter does impart some very desirable properties to soil. It can make light-textured soil heavier, and heavy-textured soil lighter. It can act as a nutrient storehouse, releasing a steady supply of phosphorus, potassium, and nitrogen."

The association said that there is not nearly enough natural organic matter available to maintain the high degree of soil fertility necessary

Maybe the potato salad was poisoned."

"But you ate so much."

"I did not. Ach, I chust got my money's worth. I'll bet the food was poisoned. I will sue that church outfit. I will not let them get by with this. I'll—"

Minnie stood beside him with a glass of water and a blue pill. "Here is your liver pill, Oscar. Shall I call Dr. Schneeweiss?"

"Andt pay him \$5? No, Minnie, how you talk, spendink money like that. Ach, I will just schleep here and not get into my bed. I'll get better. That Schneeweiss will not get \$5 from me chust for a bellyache."

★

John J. Durkin, entomologist with the New Mexico State University Extension Service, advises post-harvest sprays and a thorough clean-up program as very important steps in a sound orchard pest control campaign.

Sprays should be directed at insects and spider mites that infested trees during the harvest period when sprays are not applied. The clean-up campaign should be directed at weeds, trash and dropped fruit that protect pests during the winter.

Wooly apple aphids and spider mites are the two major orchard pests that build up during harvest, Mr. Durkin stated. These pests not only sap the strength of the trees but reduce the food supply that they are storing before frost. The pests also produce over-wintering forms that will cause extensive damage next spring if control measures aren't put into effect this fall.

The aphids that are not killed in the fall move to the roots where they spend the winter feeding on the roots during cold weather.

★

The pinto bean is making a comeback in the Lower Valley area of Colorado, according to Max Osborn of the Osborn Bean & Elevator Co., Fruita, Colo.

This year's crop was damaged by rainy weather and an early frost, but summer hail damage has not turned out as serious as first expected, he said.

A few years ago, the pinto was a prime crop in the area. Then it was supplanted in the field by feed crops, tomatoes, and beets. However, disease resisting seed, better insecticides, better fertilizers and higher prices are bringing them back into favor with the farmer.

At one time, the Lower Valley was a producing center that saw pinto harvests amount to as much as 140,000 cwt. bags.

This year Mr. Osborn expects to receive 20,000 cwt. bags.

Key to Success or Failure Of Small Business Is Manager

By DR. JEROME C. BEAM, Associate Director, Psychological Services, Clark, Channel, Inc., Stamford, Conn.

The key to success or failure of a small enterprise is the firm's manager. And the sad truth is, that there are men who simply aren't cut out to be small store managers; they're kidding themselves if they think that just because they have the authority they also have the essential personal qualities that are necessary to make them a success in that vital job.

Some men never recognize this truth; others, who have some of the important traits that would make them top notch small store leaders, have not fully developed them or, perhaps, even recognized them. And then there are the newcomers to business. They certainly should ask themselves whether or not they possess those qualities which will make them truly successful managers.

For all three of these groups, this article outlines some helpful guideposts which they can use to chart their course on the road to the top

spot in small organizations. What is suggested here is a program of self-improvement and personal development.

● **Know Thyself.** Why is a program of self-improvement and development needed? One answer can be found in a study of causes of business failures made some little while ago by Dun & Bradstreet. It showed that 89.4% of such failures were the result of shocking shortcomings on the part of managers.

But what do small business executives themselves think about this problem? In a survey of small businessmen whose concerns were in trouble, only one in 12 admitted that his own shortcomings may have been an important factor in his firm's downward path. The rest obviously refused to admit this possibility—and refused to look at themselves objectively. This is not unusual, because few people do look at themselves ob-

jectively. But little progress in the direction of self-improvement can be made until a man takes a long, hard, realistic look at himself. Then, and only then, is he in a position to conquer his shortcomings.

Can Essential Personal Qualities Really Be Identified?

Oceans of ink have been used up to describe the qualities of the "ideal" manager. If you have been reading some of the descriptions you may be pardoned for being confused. You may, for instance, assume that the qualities which appear in this list represent the final word. You may further assume that the ideal manager exists in real life, and that (to go one step further) the qualities which make a man successful in one organization will also make him successful in another, regardless of the size and nature of the enterprise. Nothing could be further from the truth.

Perhaps you yourself have had the experience of working in one organization where you felt out of place, only to get a comparable manager's position in another where you worked with great success. This is hardly strange: After all, not only each man but also each organization has a distinct and possibly unique personality. The right man in the right organization has every chance to succeed; yet the right man in the wrong (wrong for him, that is) concern may fail utterly.

● **What Do You Want to Do?** A good baseball club manager doesn't necessarily make a good football club manager; a good jazz musician may be out of place in an orchestra specializing in popular music. The same holds true in business.

Before you even try to start a program of self-improvement, you have to know what your goal is. This is true even if you are managing a small concern right now; it is certainly true if you're just on your way up the commercial ladder. If you are a relative newcomer to business, you have the opportunity to think ahead and plan your future: Do you want to be the head of a one-man operation, or a somewhat larger unit where you have several people working for you? Do you want to manage a small retail, wholesale or service organization?

If you're an old hand at managing, you still should have a good look at your organization and your own goals. For instance, are you satisfied with the type of business you manage? Are you glad that you have only a few (or, respectively, quite a few) people working for you? And is your goal simply to make money, or are your aims broader than that? At times, you may have wondered if you'd do better elsewhere. You are, after all, experienced in the art of managing a business, and managing one business (you are certain) is much like managing any other. Con-

sider, however, the following case history:

● **The Case of Mr. Baker.** Jonathan Baker was the manager of a fairly small concern, and had proved highly successful in his job. He was aggressive, and aggressiveness is usually thought of as a desirable quality in an executive.

Luckily for Mr. Baker, the owner of the firm was more of a thinker and a long-range planner. He was definitely not the aggressive type. So Mr. Baker and the owner complemented each other and together made a success of the business.

Then one day Mr. Baker received a tempting offer from another organization to take over as its manager. He accepted. On the surface, the two enterprises had much in common. Both were relatively small and in the same line. There was one trouble, however, which Mr. Baker failed to foresee. His new boss, like Mr. Baker himself, was an aggressive man. He was also uncertain of himself, and not too pleased when he discovered that his new manager was aggressive and forceful, too. Deliberately, he frustrated every move Mr. Baker made. In no time at all, the two men clashed head on, and Mr. Baker, in disgust, left the company.

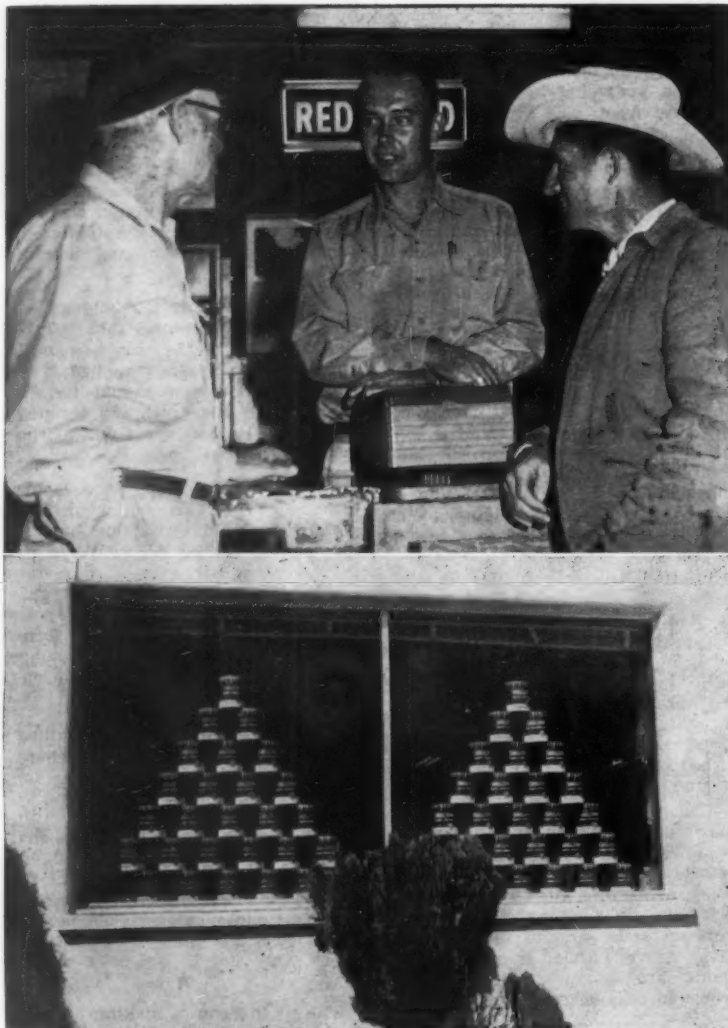
Mr. Baker's experience is a warning to newcomers and old-timers in business alike: It proves that a manager's essential personal qualities can be identified in a general way only. But it's far harder to pin down the specific qualities he has to have. What they should be depends on: (a) The type of firm he operates, and (b) the type of man he himself is.

Essential Qualities: Six "Musts"

After sounding a note of warning against over-generalizing and oversimplifying the problem of essential qualities, it's time to discuss the qualities themselves. To be sure there are probably many important qualities, but this article will talk of only six basic ones. These, however, are of vital importance to almost every manager. Their relative importance will vary, depending on the specific organization. But to a greater or lesser degree, all are highly significant in any business setting.

(1) **Getting to Know Yourself.** Clearly if you want to lead others, it will help you to know what kind of a leader you are. Perhaps you have some conception of yourself in that role. But does that image correspond to reality?

Of course, no one knows himself completely, but surely most men can know themselves better than they do. Such self-knowledge (or, as psychologists call it, "self-awareness") is not easy to attain, but it is certainly of great importance to the business leader. Some experts, in fact, believe that it is the most important and basic quality for any manager to possess. If, then, in addition, he also possesses a good mind, a variety of skills



J. F. WILLIAMSON (center, top photo), manager of the Grange Supply Co., Pullman, Wash., conducts business with two of his customers. Mr. Williamson feels that a new product must be proven before it is stocked in his store. The lower photo shows the attractive window display set up in the store.

SERVICE

(Continued from page 9)

the customer will go to someone who does.

"Our business has increased 5-10% annually," the manager says, "and has never gone back. Since there will be a gradual reduction in farm population, we must try to add to our big accounts."

"There are no personnel problems. Every man knows what he is doing. We do not practice profit sharing, but pay good wages, coupled with a

Christmas bonus."

The establishment is made up of a two-story main store, 60 by 130 ft., a fertilizer warehouse, 40 by 100 ft., a feed and seed warehouse 20 by 150 ft., and an oil and grease warehouse 20 by 100 ft.

"Chemicals alone would not support a business," says Mr. Williamson. "For us the chemical business totals about \$50,000 and fertilizer \$100,000."

The company's operations began in 1932 with total sales of \$75,000. However, the volume has increased over six times in 27 years with average profit margin being up to 15%.

SUMMARY

Money isn't everything. That's what shrewd, experienced businessmen will tell the newcomer to commerce. They know—and so do you—that success in business depends on more things than the possession of sufficient capital. Of course, capital is necessary; but of at least equal importance to the owner-manager of a small enterprise is the possession of certain qualities within himself, for without these qualities even a capital-rich enterprise may fail.

The qualities referred to in this *Aid* are the qualities of leadership (for the owner-manager is a leader). They are so essential to the man at the top that this article is going to examine the most important of these in some detail. Naturally, there are more of them than can be discussed here; in fact, many business writers have made countless lists of qualities which, they feel, are essential ingredients of small business leadership. But no such list will be of value to you unless you realize that we are talking about men who must deal with both men and situations. As a manager, you yourself know that you don't operate in a void; daily you have to make decisions, supervise men, straighten out business and emotional conflicts.

Moreover, as a manager, you have to be both a doer and a thinker, a planner and—to some extent—a dreamer. All of these requirements call into play the essential personal qualities which you, as a successful owner-manager possess. But perhaps, being right in the thick of daily business activities, you've never asked yourself what those qualities are. This *Aid* spells them out. This article was prepared with the cooperation of the Small Business Administration.

and abilities, he is certainly potentially a good manager.

But getting to know yourself means that you will have to face some facts about yourself. And one fact you must face is that you, like everyone else, have shortcomings. Another fact is that there are what might be called three "layers" of self-knowledge within everybody. The first layer includes pleasant, positive traits (for instance, love of children, love of pets) which you have no trouble discussing with others.

The second layer takes in traits of which the individual is still aware, but which he rarely discusses with others because of fear of disapproval.

When you get to the third layer, complications mount. Here is the battleground of many feelings and attitudes which a man develops as a result of past experiences; these feelings and attitudes, however, are mostly shut off even from himself, and he is only aware of them dimly, if at all. Yet, this shadowy area can strongly influence a man's actions, including what he does in business.

● **The Insecure Boss.** You yourself would probably call some of your fellow bosses petty tyrants. Certainly their employees do. What makes those people the way they are? What makes them blow-hard, blustering tyrants?

Well, those men are often simply captives of their own fears and feelings of inferiority and insecurity. They hide these fears and feelings by putting up a blustering show. They do all this unconsciously. But that fact is of little help to their employees. If such men could face up to reality, if they could see themselves as the rest of the world sees them, they might be better able and more willing to change. But without this self-knowledge, a man is seldom a truly good manager.

(2) **Combining human and technical know-how.** The management of any business operation requires a certain amount of technical skill (such as, let's say, accounting or sales management). But the possession of such skills alone does not make a man a good manager.

The good manager must be able to deal with people at least as effectively as he deals with business tools. More so, in fact. Think back now: Haven't there been many opportunities when you had to intervene personally to straighten out an unhappy employee, when you had to exert your personal influence to make people with widely differing personalities work together harmoniously? And didn't you at one time or another listen to one of your employee's personal troubles, and at least try to help him out? That's in part what makes a good manager.

The good manager must be as shrewd an appraiser of people as possible. But appraising people means to look at them objectively; it means to lay aside one's prejudices and personal feelings. Furthermore, the good manager should recognize the existence of other viewpoints and beliefs, and make a sincere effort to understand and appreciate them. Of course, it must be admitted that human behavior is one of the most difficult things to observe objectively, but the manager who can do it is the man who will run his operation successfully.

(3) **Being a Creative Thinker.** Doubtless you have known some managers who were specialists in one or the other business activities: Be it purchasing, or selling, or accounting. They may have been pretty good at it, too. But what happened when they were confronted by an unfamiliar situation? What, for instance, happened when a competitor opened up across the street, or the market area changed? Trouble with such men is that they have learned their specialty, and learned it well, but they have not learned how to analyze unfamiliar situations and develop new courses of action.

● **The Manager: All-Round Leader.**

The competitive economy of today demands that a manager have a knowledge of economic and social forces around him, of human and public relations, and not only of a technical specialty. He should also be able to see the relationship of his business to the community in which his firm operates, and to the economy in which it exists and of which it is a part.

(4) **Uniting Vision and Practical Outlook.** James Thurber's Walter Mitty dreamed of performing glorious deeds. But unfortunately these deeds were performed in his daydreams only.

Daydreams don't build a business, however. It has been said that people can be divided into two classes: Those who make things happen, and those who watch them happen. The good manager must be a man who makes things happen. As you know, people who make things happen can see long-range, ambitious possibilities. They are not afraid of important, difficult-to-reach goals. But still, they are able to plan in practical and concrete terms; that is, they can bring their vision down to attainable size. Such persons truly believe in their objectives, and will persist in trying to reach them regardless of obstacles. For instance, while they are aware of competition, they don't let fear of

competition stop them from making plans.

(5) **Knowing Goals and Approaches.** The man who wants to be a successful manager is not content just to go along with his company. His goal is to do all he can to make his company grow. Furthermore, he knows where he wants to go, and he knows what he needs to do to get there. This is the mark of the successful manager.

Unfortunately, too many young men entering business today misunderstand the relationship between competence and promotion. They are Walter Mittys who happily daydream about sitting behind an over-size executive desk, giving orders to others, and taking long lunch hours. They are often unwilling to do the things in the present which will help them reach the dreamed-about summit in the future. In other words, they are interested in the rewards of achievement, but not in the process of achievement.

(6) **Having Genuine Belief in Yourself.** The successful manager must conquer—or at least subdue—his fears. To lead, he must first develop real self-confidence. Real self-confidence: Many individuals appear relaxed, poised, and confident on the surface, but in fact they are none of these.

Without question, in some circum-

stances fear can be the trigger to great achievement. A recent survey showed that some men in top positions in American business were apparently literally whipped to the top by inner fears and feelings of insecurity. But such men, even though "successful" in business, are often quite unsuccessful as human beings.

What Can You Do To Improve?

Probably the most important of the Six Musts discussed in this article is the one that reads, "Getting to Know Yourself." Getting acquainted with yourself demands some practice. You might, for instance, start by putting aside a few minutes each evening to turn over the day's events in your mind. You might try to recall the problems, and the ways in which you handled them. And then you might ask yourself why you did just what you did, in the manner in which you did it. This will tell you a little about yourself, certainly a little about yourself as a boss.

NURSERY INCORPORATED

FRESNO, CAL.—The Asahi Nursery, Fresno, has been incorporated with an evaluation of \$75,000. The nursery, retailing and wholesaling garden and farm products, is owned by Tom Ishimoto, Masaro Nishioki and Mikotot Nishioki.

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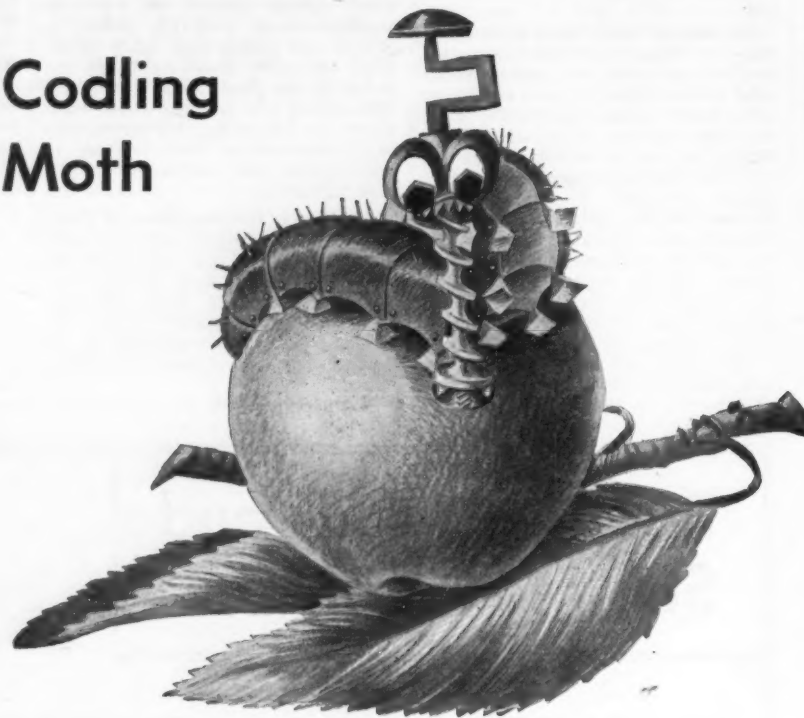
The theme of the book is the necessity of chemical fertilizers to maintain the fertility of the soil. It has concise information on which soil conditions and which chemical fertilizers are most suited for special crops and vegetables. Space is devoted to cereal crops, barley, wheat, oats and rye; to roots and tubers, sugar beets, potatoes, carrots, parsnips and turnips; to vegetable crops, beans, peas, alfalfa, lupines; to grasses and clovers; to onions, flax, kale, cabbages, lettuce, tomatoes, celery, cauliflower and fruits. It clarifies the relationship of manures, compost and chemicals as fertilizers and points out how chemicals should be used to obtain the best results. Its philosophical soundness and logic should do much to avert the confusion of thought introduced by the advocates of compost and manure as against the use of chemical fertilizers. \$8.50

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Codling Moth



How to Identify

The codling moth is a dirty-white or pinkish caterpillar or worm frequently found in apples. Its distribution is all over the United States. In some sections it is called the appleworm.

Life History of Codling Moth

The worms pass the winter in cocoons in crevices under the bark and in other protected places, usually on or beneath the tree. The moths begin to appear about the time apple trees bloom and some moths are present most of the remainder of the growing season. The tiny white eggs are usually laid on leaves near fruit or on the fruit. The first worms normally begin to enter the small apples 3 to 4 weeks after the blossom petals have fallen. The number of generations in a season ranges from one (with a small part of a second) in the northern apple-growing areas, to three nearly complete generations (and a part of a fourth) in the southernmost producing areas.

Damage Done by Codling Moth

Although this pest is usually associated with damage to apples, it also attacks pears, quinces, English walnuts and occasionally other fruits. In apples, it causes the familiar

worm holes on the sides and blossom ends of the fruit. The tunnels go completely to the core. These holes are often filled with dark-colored masses, coarse brown or black pellets which sometimes project out of the hole. Such apples are, of course, of small value and the value of fruit thus damaged runs into hundreds of thousands of dollars each year.

Control of Codling Moth

Since this insect burrows inside the fruit, proper timing of application of insecticides is of utmost importance. The first application should be made just after the blossom petals have fallen, according to USDA information. Recommendations for control materials, timing, application practices, dosages, etc., may vary widely in different states and sections of the country. It is therefore difficult here to attempt to give specific suggestions as to what materials should be used or how they should be applied. Local authorities such as county agents, state experiment station entomologists, and manufacturers of the various pesticides should be consulted for specific information. Labels on pesticide containers carry full instructions on use and dosages. Users should always be urged to study labels carefully before applying any insecticide on food or feed crops to avoid the risk of illegal residues at harvest time.

Codling Moth illustration furnished through courtesy of E. I. duPont de Nemours & Co., Inc., Wilmington, Del.

\$2 Million Simplot Expansion Program Nears Completion

POCATELLO, IDAHO—A \$2 million expansion program at the J. R. Simplot Co.'s fertilizer operation, which included construction of a new plant and building of an addition to the main plant, is nearing completion, according to W. Grant Kilbourne, general manager of the firm's fertilizer and mining division.

First phase of the expansion, which started early this year, was a new plant for the manufacture of sulphuric acid. This plant went into production in mid-August, and was expected to produce 400 tons of sulphuric acid daily.

Nearing completion is an addition to the main plant, which will increase production an estimated 65% to about 175,000 tons of high analysis annually.

The company mines phosphate ore deposits at Gay Mine on the Fort Hall Indian Reservation, the principal element in the manufacture of triple superphosphate, an agriculture fertilizer, which it manufactures and ships from its plant west of Pocatello.

It also furnishes the entire phosphate requirements of Westvaco Mineral Products Division FMC, which manufactures elemental phosphorus in its plant near the Simplot facility.

Simplot will now purchase elemental sulphur produced in Montana and also oil and gas reform in tank cars. This will be turned into sulphuric acid at the new plant.

Calspray Announces Personnel Appointments

RICHMOND, CAL.—California Spray-Chemical Corp. has announced a number of appointments throughout the firm's organization.

Gerald White and John Oakley have been named eastern and western Canadian branch manager, respectively, of Ortho Agricultural Chemicals Ltd.

Bernard J. Lowery has been appointed merchandising specialist. He was formerly production specialist with the firm's advertising division.

Duncan Hayes Pierce was named advertising technician, with duties in the garden and home advertising departments.

Merlin Chiles received an appointment as advertising specialist, to be concerned with advertising the Ortho line. He was formerly with Monsanto Chemical Co. in St. Louis.

Robert Edward Chandler has been appointed production specialist. He was formerly with Victor & Carter, San Francisco, direct mail specialists. He will coordinate and direct the Calspray visual advertising program.

Texas A&M Schedules Plant Disease Short Course

COLLEGE STATION, TEXAS—A Plant Disease Short Course will be held Nov. 23-24 at Texas A&M College. It will be presented by the department of plant physiology and pathology, according to Dr. Harlan E. Smith, extension plant pathologist.

Vegetable diseases and their control will receive attention. Vegetable diseases in central, south, west and east Texas will be discussed by men familiar with diseases in these areas. Cotton diseases and their control with exhibits of diseased plants will also be featured. A panel discussion on ornamental diseases and their control will also be presented.

CSMA MEETING

NEW YORK—Efficiency and marketing know-how are two themes to be stressed at the 46th annual meeting of the Chemical Specialties Manufacturers Assn. to be held at the Hotel Mayflower, Washington, D.C., Dec. 7-9.

Panel Discussion Feature Of Indiana Conference

WASHINGTON—"What a Farmer Expects from His Fertilizer Dealer" will be the subject of a panel discussion at the Indiana Fertilizer Conference, Dec. 2, at Purdue University, Lafayette, reported the National Plant Food Institute.

Participating will be E. C. Weiss, Sinclair Petrochemicals, Inc., and three Indiana farmers.

Dr. V. W. Ruttan of the university's agricultural economics department will discuss "The Role of Fertilizer in the Changing Agricultural Economy."

Members of the university's agronomy department will report on crop production practices, efficient fertilization, soils research now in progress at Purdue and fertilizer recommendations for Indiana crops.

Dr. John R. Guttay, district representative of NPFI, will present four

15-minute sound-equipped film strips on fertilizer sales training during the morning and afternoon sessions. This fertilizer sales training course was produced by Empire Sales Training, Inc.

Salesmen and dealers of all fertilizer companies doing business in Indiana are invited to attend the conference.

Dr. J. B. Peterson, head of the university's agronomy department, will be master of ceremonies at the evening banquet.

New Research Associate

MARCUS HOOK, PA.—Seymour W. Ferris has been appointed as a research associate in Sun Oil Co.'s research and development department.

Simultaneously, Ivor W. Mills was appointed to succeed Mr. Ferris as section chief for industrial products in Product Development.

Fire Destroys Calspray Maryland Building

WILLIAMSPORT, MD.—A chemical-fed fire raged out of control for six hours here on Oct. 13 and destroyed a 300-foot building occupied by the California Spray-Chemical Co., two silk mills and a trucking firm.

Maryland State Police reported the total loss is estimated at between \$1,000,000 and \$1,500,000. The chemicals in the storage room of the insecticide firm caused the most trouble for firemen.

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fits of UAL begin. UAL provides nitrogen in both the urea and ammonium form—nitrogen that becomes available at a rate closely paralleling plant requirements. Nitrogen from Du Pont UAL is also leach-resistant; remains in the root zone long after other forms have been exhausted.

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ROUNDTABLE

(Continued from page 1)

ough mixing and close packing in the pile to give uniform reaction and firm primary set.

A third necessity for satisfactory curing is high mechanical pressure as brought about by a large pile. This packs the particles closely to give uniform reaction and firm primary set.

Satisfactory condition of packaged goods depends on relatively low moisture content accompanied by little or no chemical reaction; no moisture absorption during or subsequent to the bagging operation, and a low amount of soluble material in solution, he said.

Large particle sizes are desirable in the bag, presenting a minimum number of points of contact between particles and thus less packing.

Low mechanical pressure is another important consideration, the speaker said. By piling the bags low, fewer points of contact are made between particles and less crystal knitting takes place.

Urea-Nitrate Use

Three speakers discussed the use of urea-nitrate solutions in fertilizer manufacturing. These were H. H. Tucker, Sohio Chemical Co., Lima, Ohio; G. R. Gilliam, Nitrogen Division, Allied Chemical Corp., Hopeville, Va., and J. W. Lewis, E. I. du Pont de Nemours & Co, Inc., Wilmington, Del.

Mr. Tucker said that urea-nitrate solutions have been on the increase over the past few years, due to a number of possible reasons. Among these, he said, are factors concerning lower saturation temperatures and ease of transportation. Such solutions increase the amounts of nitrogen obtained, reduce the amount of acid required, alters crystal structure favorably and softens the end product.

As to amounts of urea, Mr. Tucker said that about 20 lb. per ton of end product is satisfactory, with the upper limits being around 50 lb. a ton when used with ammonium nitrate.

Mr. Gilliam said that use of such solutions in conventional fertilizers is favorable because no mechanical drying is necessary, and the product has little or no agglomeration in manufacturing. Such a solution has lower content of free ammonia, with the same water and nitrogen content. These considerations offer a major advantage to the mixer, Mr. Gilliam said, since they utilize materials already containing urea.

Mr. Lewis said the starting point in formulating conventional complete fertilizer mixtures is the selection of the amount of free ammonia to be used per unit of P_2O_5 . Such a choice, he said, depends upon the grade to be made, past experience with the particular superphosphates being used, use of a cooler, the expected storage time and the other formula ingredients involved, particularly those of strongly alkaline nature, he added.

Rates of ammoniation recommended are 3 lb. free ammonia per unit of P_2O_5 from triple superphosphate and 5 lb. ammonia per unit for ordinary super. The lower limit of ammoniation is largely a question of physical condition while the upper limit is much less definable.

The subject of segregation of materials in fertilizer mixes was discussed by four speakers representing USDA and three manufacturers of mixing equipment.

Segregation Studied

Dr. W. L. Hill, fertilizer investigations research branch, Agricultural Research Service, USDA, Beltsville, Md., described segregation as "unmixing something that was previously mixed." He said there are various kinds of material segregation, but

when segregation proceeds to the point of general stratification in the lot, it is at its worst. Such conditions occur when a mixture of large granules contains some that are small enough to pass through the intergranule channelways, he explained. Moderate vibration causes the small ones to fall to the bottom.

Dr. Hill explained in some detail the factors entering into such conditions and illustrated his points by a chalk talk showing the classification of granule fineness.

Descriptions of mixing machinery were presented by representatives of companies manufacturing such equipment. H. L. Krueger, Stedman Foundry & Machinery Co., Aurora, Ind., discussed operating procedures for rotary batch mixers for dry mixing, mixing and ammoniation, and mixing, ammoniation and granulation. He told the audience that the timing of mixing was a particularly important consideration. Here are some figures he quoted:

For dry mixing, a maximum of 1 minute should be ample for $\frac{1}{2}$ ton to 2 ton batches.

For mixing and ammoniation, mixing time will vary, but from $1\frac{1}{2}$ minutes to 2 minutes should be enough, he said. This should include time required to inject the solution.

For mixing, ammoniation and granulation, holding time will vary with analysis, formulation and granulation properties of ingredients, he said. However, as an average, he recommended the following mixing times, after all materials have been introduced: $\frac{1}{2}$ ton, 1 minute; 1 ton, $1\frac{1}{2}$ minutes; $1\frac{1}{2}$ tons, 2 minutes, and 2 tons, 2 minutes.

Mr. Krueger reminded, however, that there are so many variables when granulation is required, that the best granulation becomes a matter of "know-how."

The matter of discharge time was also covered by Mr. Krueger who said that in dry mixing, it should be about 20 seconds; mixing and ammoniation, 30-40 seconds; and mixing, ammoniation and granulation, 40-60 seconds. However, he added, the type of discharge chute on the mixer can have considerable bearing on the time involved.

Walter Sackett of A. J. Sackett Co. showed on the screen phantom views of the gravity mixer manufactured by his firm. The device was pictured as a vertical cylinder with several chambers and mixing gates which allow the different materials to flow by gravity through the mixing gates and are blended as they drop from top to bottom.

He showed how new materials may be entering the top compartment at the same time the mixed ingredients are being discharged at the bottom, thus speeding up the process by operating two batches at a time.

R. E. Robinson, Atlanta Utility Works, Atlanta, Ga., said that since there are numerous methods of mixing dry solids, choice of method and equipment depends on the natural properties of the solids involved. For fertilizer mixing, however, Mr. Robinson said, the rotary drum batch mixer has emerged as primary equipment.

With the advent of synthetic nitrogen solutions, mixing of fertilizers became a chemical operation involving chemical reactions in addition to physical processing. Proper utilization of a batch mixer for ammoniation requires an understanding of the mass flow of material in the mixer past the solution distributor, and consideration of the time factor in introducing solutions into that mass.

Requirements for mixing, ammoniation and granulation impose added problems on the batch mixer, regardless of whether granulation is accom-

plished in the mixer or in a rotary drum following the mixer, he said. Controls must be maintained to keep physical condition suitable for accomplishment of the granulation process.

Thus installation and maintenance of rotary drum batch mixers have become more exacting as the mixers have become more complex and operating conditions more severe, he reminded.

Semi-granular mixes were discussed by four speakers. T. R. Schmalz, F. S. Royster Guano Co., Norfolk, Va., covered the subject from the standpoint of rotary mixers, describing some of his own experiences in producing semi-granular product. He said that fairly close particle size production must be maintained, since no recycle is used. Thus the requisites for particle size are few but critical and are primarily controlled by the raw materials and formulation.

Coarse potash is used, he said, and added that superphosphate binds the particles of potash better than does triple. Sulfuric acid plays a leading role in the operation, he said, and is used to react with ammonia from solutions and to elevate temperature in the mixer to promote plasticity and drying.

Mixer arrangements are not radically different than normally, he said, but a good exhaust hood and stack at the mixer discharge is desirable since a considerable volume of vapor is generated by the high temperature in the mixer.

Cooling of the product was listed by Mr. Schmalz as being of great importance also. For best results for minimizing particle breakdown, immediate cooling from the mixer temperature of about 200° to around 120-130° or lower, is desirable.

George Walton, Midwest manager, Tennessee Corp., described the Eymann process of making fertilizer of improved physical condition. Mr. Walton said it should not properly be called "semi-granular," but rather, pulverized fertilizer containing enough granules to make it better. The product, he said, is dust-free and the particle sizes are larger than they are in pulverized products.

The sparger, he said, is similar to that used in the TVA process, and is discharged through two coolers, 6 ft. in diameter by 20 ft. in length. The cooled product is screened to take off oversized particles and return them to mixer.

Elmer C. Perrine, Nitrogen Division, Allied Chemical Corp., New York, continued the discussion on semi-granular manufacturing. He declared that the line between semi-granulation and full granulation is not sharply drawn, and some of the limitations of semi-granulation accumulate against it as tonnage increases to render it finally more costly or otherwise less attractive than full-scale granulation. This takes place at about the tonnage level where full-scale granulation itself starts to become attractive for its own special merits. "In fact," he said, "there may be a gap in the fields rather than an overlap."

A description of the block-type sparger was presented by Joe C. Sharp, Spencer Chemical Co., Kansas City, Mo. He showed a number of cut-away drawings on the screen and explained in detail how the device operates.

Two presentations on statistical quality control in fertilizer manufacturing were made at the Round Table. Chester McCall, Booz-Allen Research, and Vance Ward, Canadian Industries, Ltd., Montreal, covered the subject, each pointing out the necessity of using scientific approach. Mr. McCall reminded that averages alone are not adequate in determining quality control, but one must know the range of figures, such as how far above and how far below the desired

weight of bags the present equipment goes.

Mr. Ward illustrated his talk with a working model showing the distribution pattern of "fertilizer" dropping into bags from a single opening. The pattern followed closely the "bell-shaped" curve shown on the theoretical chart, indicating that some fertilizer bags will have more than they should; others less. The trick is, he said, to find out what adjustment must be made to narrow down the spread without taking undue risks of excessive overages or shortages.

New Mexico Chemical Conference Plans Set

UNIVERSITY PARK, N.M. — Chemical industry representatives will be teamed with staff members of university research departments in the presentation of talks at the third annual Agricultural Chemical Conference here Jan. 13.

Results of research on insecticides, nematocides, fungicides, herbicides, and fertilizers will be the conference's main topics, says Dr. J. Gordon Watts, head of the department of botany and entomology here at New Mexico State University. Dr. Watts is chairman of the conference.

Main speaker will be Frank Irons, engineer with the U.S. Department of Agriculture Agricultural Research Service at Wooster, Ohio, who has specialized in development of pesticide application machinery. He will talk on ground and air application of pesticides.

The conference precedes NMSU's annual fruit and vegetable short courses Jan. 14 and 15.

NINE-MONTH REPORT

NEW YORK—Gross revenue from sales of Texas Gulf Sulphur Co. for the first nine months of 1959 totaled \$48,642,607 as against \$40,328,064 for the comparable period a year ago. Net income for the nine-month period amounted to \$9,672,934, equivalent to 96½¢ per share on the 10,020,000 shares in the hands of stockholders. This compares with earnings of \$10, 024.917, or \$1 per share, for the like period of 1958.



Charles E. Martin

JOINS PERCY KENT—New member of the sales force of the Percy Kent Bag Co., Kansas City, is Charles E. Martin. His appointment as manager of sales to the fertilizer and plant food industry from the Chicago office has been announced by Richard K. Peek, company president. Mr. Martin will also call on the feed and flour industries in the central states, making his headquarters at the Percy Kent office, 205 W. Wacker Drive, Chicago. Before joining Percy Kent, Mr. Martin was district sales manager for the potash division of International Minerals & Chemical Corp. He lives with his wife and two children in Highland Park, Ill.

Hercules Announces West Coast Appointments



Don M. Allison

James L. Scott

WILMINGTON, DEL.—Hercules Powder Co. has announced three new assignments for technical representatives on the West Coast, all of whom are responsible for sales of nitrogen products for general agricultural use.

Don M. Allison, a member of the Hercules staff since September, 1955, will service central and northern California. He will make his headquarters in Hercules' San Francisco branch office. Mr. Allison majored in soils and agronomy at the University of Missouri, receiving his B.S. degree in agriculture. He operated his own fertilizer concern in Essex, Iowa, before he became associated with Hercules, and has had experience working on plant food requirements of West Coast soils during the past few seasons.

James L. Scott, also a graduate of the University of Missouri where he majored in soils and field crops, will make his headquarters in Portland, Ore. Mr. Scott's territory will include Oregon, Washington, western Idaho and western Montana. He came to Hercules in July of the current year, bringing with him over 10 years' experience in plant food technology. Mr. Scott was associated with the Missouri Farmers Assn. in Columbia for several years, and most recently was district manager of the Mid-South Chemical Corp. of Memphis, Tenn.

Charles R. Staib will serve Hercules customers in southern California and Arizona, with headquarters in Riverside, Cal. Mr. Staib received his B.S. degree in agronomy at the State College of Washington in Pullman, and his M.S. in agronomy from the University of Idaho. While completing requirements for his master's degree, Mr. Staib was research technician in agricultural chemistry at the university.

AMMONIA CONTRACT

TOKYO—A contract for 50,000 tons of ammonia sulphate has been signed between the Ammonia Sulphate Export Co. and the Nationalist Chinese government. The shipment to Formosa is expected to be completed by the end of November. The firm also plans to negotiate with Taiwan for a one-year export contract.

TOP CORN YIELD

CAIRO, GA.—The fertilization practices used by Tyler Maxwell, Grady County 4-H Club boy, were a factor in his turning in a top corn yield of 179.5 bu. an acre.

For his high yield, young Mr. Maxwell won top place in competition at the 13th annual Grady County Corn Show held at Whigham. Another record was the fact that at least 65 of the contestants showed production in excess of 100 bu. per acre.

The old yield record, made 10 years ago, was 154 bu.

Young Maxwell, who is the son of Mr. and Mrs. Holmes Maxwell of Calvary, Ga., and a member of the Hi-Lite 4-H Club, planted General Jackson variety in 24-in. rows, 12 in. in the drill. He used 900 lb. of 3-9-9 fertilizer and 900 lb. of ammonium nitrate per acre. He used no irrigation.

The winning boy received \$229.30 in cash prizes—\$1 a bu. from Wight & Browne, Cairo, and two surprise \$25 checks from nitrogen and fertilizer concerns.

Eradication Program Works in Georgia

ATLANTA, GA.—The state of Georgia is fast eradicating many farm pests which have caused losses in the past, including fire ants, white-fringed beetles and livestock diseases and insects. All are falling victim to modern scientific methods.

The Department of Agriculture has supervised treatment of 280,482 acres which were infested with fire ants. These treated acres were in 18 different counties. About 120,000 acres remain to be treated, and work is going on in six more counties.

Measures are also being taken against white-fringed beetle over the state. All known infestations in 25 counties were treated, but there are an additional 48 counties known to be infested. Some 23 counties will be treated during the coming year.

Screwworms have been virtually eliminated in the state. Only two cases were reported in 1958, and no

cases have been reported thus far this year.

Brucellosis is well on the way toward eradication. One hundred and thirty-eight of the state's counties have been tested completely, and 20 are now testing.

North Carolina Reveals Pesticide School Plans

RALEIGH, N.C.—The 1960 Pesticide School will be held Jan. 13-14 at North Carolina State College in Raleigh.

Dr. Roy L. Lovvorn, director of research for the North Carolina Agricultural Experiment Station, will open the program with his welcoming address and Dr. Emol A. Fails, associate professor of economics, will follow with "How Do You Sell Your Product?"

The remainder of the two-day program is divided into three sections: Weed control, entomology, and plant pathology.

IMC Promotes Two In Plant Food Division

SKOKIE, ILL.—The plant food division of International Minerals & Chemical Corp. has announced promotion of two men in its Skokie headquarters.

John D. Zigler, general manager of the division, appointed Fred J. Jilek inventory control coordinator, and Henry F. Elzenga administrative staff assistant.

Mr. Jilek came to IMC as a cost accountant in 1942 and was promoted to supervisor of plant food division cost accounting in 1950. Since 1952 he has been assistant to the general manager.

Mr. Elzenga joined IMC in 1952, and was a division analyst in the profit planning department. Before joining IMC he was an accountant for Pullman-Standard Car Manufacturing Co. and United Specialties, Inc., both in Chicago.

You'll get a better understanding of the fertilizer market from this valuable new book



Crop-Use Patterns of Fertilizer

in the United States

by

J. R. ADAMS L. B. NELSON D. B. IBACH
U.S. DEPARTMENT OF AGRICULTURE

This significant report was compiled by the U.S. Department of Agriculture after thorough studies of fertilizer use in the United States. Crop-Use Patterns covers questions which, until now, have not been adequately answered. Crop-Use Patterns is based on information gathered from every fifth farm surveyed in the most recent U.S. Census . . . providing a broad base of national information.

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how fertilizer is used among major crops
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SOLUTIONS

(Continued from page 1)

bership to 208. This, he said, has brought about an increase of 300% in the past four years.

John L. Wilson, Semo Liquid Fertilizer, Inc., Charleston, Mo., general convention chairman, presented a brief preview of the convention activities, pointing out the general theme of "today and five years from today." Heralding the program as being of considerable significance, he explained that those in attendance would find much information on new methods, suspensions, application, and other information from fellow conventioners.

George Dole, Monsanto Chemical Co., explained in more detail the use of ammonium phosphate as a fire fighting agent. He said that several states had made experiments and had found the material useful in fighting fires. These states include Georgia, Missouri, North Carolina, Florida, and Mississippi. In addition to these, he said that interest is being shown in other states for the same purpose.

This material can be sprayed from an airplane, or through ordinary nozzles in fighting a fire. Mr. Dole said it is easily pumped, is non-abrasive, versatile and effective at low concentrations. Only one and one-half pounds per gallon is needed. This, he said, puts the cost down to a low figure. The material can be stored in anything but aluminum containers.

He indicated to the audience that this idea might form an excellent new outlet for sales of material both as a fertilizer and as a fire fighting weapon.

Vern Martin, sales consultant from Newton, Iowa, presented an illustrated talk on some of the essentials of salesmanship. He likened the salesman to a sleek ocean liner which starts its career clean as a whistle but eventually acquires a big collection of barnacles which slow down its speed and impede its efficiency. Likening these barnacles to bad habits the salesman might pick up, he listed the following as being obstacles which keep a salesman from doing his best:

1. **Lack of enthusiasm.** You must have it, he said. In fact, enthusiasm was listed as the number one quality that every salesman must have in good quantity.

2. **Being a poor listener.** He told the salesmen present to give the prospect a chance to have his say. "Never insert more than 50% of the conversation," he warned. People think when they are quiet, he said.

3. **Failure to say "thank you."** One of the great needs of the human being is to be appreciated and recognized. The words "thank you" are magic words, to which people will respond immediately.

4. **Lack of sustained effort.** A salesman must be willing to do a thorough job. He likened salesmen to an ordinary old horse which requires an occasional nudge with a spur to get it going and a thoroughbred who "carries a spur in its blood." He indicated that what we need are more "thoroughbred" salesmen on the job.

5. **Lack of tact.** Everybody likes to do business with people whom they like, he said. One of the most important men in the sales chain is the local man. He must learn to get along with people and not to overlook the little things that count up to favorable impressions.

6. **"Blissness."** This misspelling of the word "business" is merely putting the "I" before the "you" ("U") in business transactions. He indicated that this principle can make or break a salesman, particularly those dealing with farmers.

7. **Failure to put service before self.** This he said is a simple rule, but one often broken. If an appointment is made with the farmer or any other

customer for a certain time, be sure the hour is kept very punctually. A broken promise can be a broken friendship, he added.

8. **Talking in generalities, not in specifics.** He asked the salesmen to be specific and to sell a product for what it does rather than for the sake of the product itself. Farmers buying fertilizer are not interested in the material itself but what it will do in the way of increasing crop yields and income.

9. **Failure to sell all of the benefits.** Even if the salesman believes the customer does know most of the features of the thing he is selling, he should still go through all the benefits in order to make the sales pitch complete.

10. **No organized plan for prospects.** Salesmen, he said, should not become discouraged if they make one, two, or even three calls without closing the deal. Statistics show that the fifth call is the optimum one in many cases.

11. **Failure to treat objections as questions.** This is one, he said, where an objection can be dignified as an intelligent question. The salesman might say, "That is a fine question, Mr. Jones. We are glad to give you this information . . ."

12. **Failure to use the user.** The word of the farmer across the fence to his neighbor is one of the most valuable bits of publicity one can get in this business, he said. Allowing the user to tell others of his satisfaction is an extremely strong publicity method.

13. **Failure to make a test closing.** Merely telling the story isn't enough, he said. Questions should be asked that can be answered only "yes" or "no". A good maxim is never to ask a question that could bring the answer "no".

William S. Newsom, Jr., International Minerals & Chemical Corp., Mulberry, Fla., told the convention the advantages of suspension fertilizers appear to be great enough that serious consideration of trial production during the off-season is merited.

In discussing the subject of suspension fertilizers as compared to liquid fertilizers, Mr. Newsom pointed out the following factors:

Lower cost of raw materials; ability to make higher analyses; and the possibility of incorporating secondary and minor elements in significant quantities.

Disadvantages of suspension fertilizers compared with liquids number at least four, Mr. Newsom said. These are: More skill is required on the part of the operator; additional capital expenditure is required; the plant is more difficult to keep clean; and there may be customer resistance to be overcome.

The speaker listed a number of suitable raw materials for suspension fertilizers. Among these were wet process phosphoric acid; muriate of potash; anhydrous or aqueous ammonia; ammonium nitrate-urea-water solutions; suspending agents; potassium sulfate; and sulfate of potash-magnesia.

"Particular attention must be given to the dispersion of the clay in water," Mr. Newsom said in describing the clay dispersion technique. "A high shearing stress is required to break up the fine agglomerates of clay into their ultimate particles. If the clay is not properly dispersed by powerful beating or by application of other high shearing stress, poor suspension will result. Poor dispersion will also leave lumps in the slurry and these lumps will clog screens," he reminded.

"Good dispersion of the clay is the key to the production of high-quality suspension fertilizers," he went on. The percentage of clay that should be used will depend on a number of factors. These include the grade being made,

its formulation; the method of neutralization; the temperature attained during neutralization; and the length of time the mixture is to be stored.

Grades made as suspension fertilizers, when the K₂O is supplied by muriate of potash, include 12-12-12; 16-8-8; 5-15-15; 2-6-18; 8-16-16; and 14-9-7.

Chloride-free grades in which the K₂O is supplied by sulfate of potash include 4-8-12 and 5-10-15.

A chloride-free grade made with mixtures of sulfate of potash and sulfate of potash magnesia is 4-8-12.

Stabilization of liquid fertilizers with "Attagel 30", described as a colloidal grade of attapulgite, was covered by Edgar W. Sawyer, Jr., Minerals & Chemicals Corp. of America, Menlo Park, N.J. He said that use of this material makes possible production of higher analysis liquid fertilizers, use of lower cost raw materials, stabilizes liquid fertilizers below salting-out temperatures; and makes possible the use of insoluble ingredients.

Use of this type of material, he said, overcomes or alleviates problems such as analysis limitations, purity limitations, and ingredient limitations. The material may be dispersed into a liquid fertilizer in several ways, he said. Thickened concentrates (10-15%) can be made in water, nitrogen solutions, phosphoric acid solutions or in a portion of the final fertilizer. The concentrate is then diluted to the desired level by the addition of the balance of the formulation.

"Wet Process Phosphoric Acid in Liquid Fertilizers" was the title of a paper presented by F. M. Batson, General Chemical Division, Allied Chemical Corp. He observed that green acid can be used successfully in all liquid fertilizer formulations, despite earlier predictions that it would not work out well.

Touching on the supply problem, Mr. Batson said that the trouble lies not in lack of production facilities, but rather in lack of storage and distribution during periods of peak demand.

"The obvious method of alleviating the acid supply situation is for the people involved to work out operations so the producers can make and deliver acid throughout the year. We fully appreciate the position of the manufacturer when farmers are calling for fertilizer and at the same time you are unable to supply it because of acid shortage . . . Accordingly, we think that each of you who is interested in preserving or acquiring an assured supply position, should put in sufficient storage so that you can receive acid on a regular monthly basis throughout the year."

The speaker said that this naturally poses financial problems, but ways are being found to provide ample storage at low cost. He then described a method of storage in a "pool" made from hollowed-out ground and lined with burlap and asphalt. The storage basin would then be covered to keep out weather and dirt. Some of these storage facilities are presently in use, he said, and apparently prove satisfactory.

Nitrogen formulations in liquid fertilizers were discussed in a presentation by H. H. Tucker, Sohio Chemical Co., Lima, Ohio. He said that in some ways, formulating liquids

is more simple than working with solids, in that the chemical reactions are instantaneous and complete. On the other hand, they are more complicated because a more exact pH is needed to control solubility of phosphates. "Also, you must be more exact in the amounts of urea and/or ammonium nitrate which you use, as this relationship also affects solubilities," he said.

Mr. Tucker reminded his audience that liquid fertilizer formulations are seldom simple to calculate, since formulations are done to a definite pH and at the same time the amounts of urea and ammonium nitrate salts must be controlled.

Urea is the preferred source of supplemental nitrogen for manufacture of liquid fertilizers, he said. As compared to ammonium nitrate, Mr. Tucker went on, urea gives higher solubilities with lower saturation temperatures and permits the manufacture of high analysis fertilizers. However, since ammonium nitrate usually costs less per unit of nitrogen, compared to urea, the problem becomes one of using the highest proportion of ammonium nitrate to urea, consistent with desired saturation temperatures.

Presenting on the screen a number of illustrations showing the triangular method of calculating nitrogen formulations, Mr. Tucker explained the principle of utilizing this method both for amounts of various materials to use and also for determining the respective costs of ingredients.

A panel discussion presenting viewpoints of suppliers of nitrogen, phosphates and potash enlightened the audience on why there are sometimes spot shortages of materials at the height of the season. J. E. Tuning, Spencer Chemical Co., Kansas City, said that the question of nitrogen supply is one of economics. It would be physically possible for the producers to build facilities capable of making a year's supply during the short season, but the costs would be astronomical, he said. The factors of storage, time of movement, and total supply of materials are closely knit and all levels of the business must work together to assure smooth distribution.

As an example, Mr. Tuning described a typical situation of a manufacturer whose storage bins are empty on June 30. In July, sales are up some, but production outstrips deliveries, and the same situation continues through August. During the months of October, November and December, when material in great quantities might easily be routed to storage areas where it will be needed in the spring, only a little is being sold.

January's production goes into storage, more than filling the facilities. By February, materials begin to move out, but not as fast as production puts more in the warehouse. By March, the movement out about equals the input, but April, May, and June find the peak of activity when production cannot keep up with deliveries.

The answer, Mr. Tuning emphasized, lies in more deliveries during the off-season. By anticipating the increased demand at that time of the year and getting in supplies ahead of time, a more orderly marketing system will be possible, he said.

James L. Brown, Monsanto Chemical Co., St. Louis, Mo., reviewed the supply-demand picture in phosphates during the past several years pointing out that the entire liquid fertilizer business has come into being since 1950 at which time there were practically no plants. In 1955, he said, there were 100; in 1957, 200; in 1959, 300; and by 1961, he predicted, there will be 400.

Not only increasing numbers of plants, but of tonnages are shown, Mr. Brown declared. The curve on the production chart is more steep than the one showing the increase in plants. In 1955, tonnage was about

DIRECTORS NAMED

ST. LOUIS, MO.—Six new directors were elected by the National Fertilizer Solutions Assn. at its meeting here Nov. 9. They are: Edward O'Nan, Land O'Nan Warehouse, Sturgis, Ky.; Edwin Aylward, Aylward Fertilizer Co., Sullivan, Ill.; Rhodon Cross, Farmers Elevator Co., Oakville, Ind.; Clyde Gilna, Narco Chemical Co., Denver, Colo.; H. H. Tucker, Sohio Chemical Co., Lima, Ohio; and Robert West, Tryco Manufacturing Co., Inc., Decatur, Ill.

100,000; in 1957, 200,000; 1958, 350,000, and in 1959, 475,000 tons.

Despite many variables such as weather, the highly seasonal aspects of the business, government programs, and financing, the liquid fertilizer business has moved ahead remarkably, Mr. Brown observed.

Dr. Edwin C. Kapusta, United States Borax & Chemical Corp., New York, described the potash situation. Like his colleagues on the panel, Dr. Kapusta urged the fertilizer manufacturers present to expand storage facilities to afford a better margin of supply. "In many instances, raw material storage space at the fertilizer plant is inadequate to meet even the most minor fluctuation in the manufacturing program," he said. Adequate storage facilities are the only way the fertilizer producer can provide the type of service his customers expect while at the same time taking advantage of every opportunity for increasing sales and profits.

A final session in which questions were invited from the floor featured a panel moderated by Robert A. Lemler, Allied Chemical Corp., Indianapolis, Ind. Appearing with him on the panel were Edward A. Wex, Badgerland Liquid Fertilizer Corp., Milwaukee, Wis.; Edward C. Aylward, Aylward Fertilizer Co., Sullivan, Ill.; Nelson D. Abell, Ouachita Fertilizer & Chemical Co., Monroe, La.; E. E. Crouse, C. D. Liquid Fertilizer Corp., Liberty, Ind.; L. T. Stone, Goodpaster Grain & Milling Co., Brownfield, Texas, and Morris Woosley.

Panelists discussed various advertising media and urged the liquid manufacturers and distributors present to use every means available to get the message across to farmers. The newspaper was rated as perhaps the best medium by some commentators, but radio, TV, pamphlets, and direct mail efforts were all presented as helpful media.

Group meetings were heralded as being of particular importance. E. E. Crouse, commenting on this subject urged his listeners to be careful of the timing of such a meeting so it won't interfere with other events such as ball games; have a right place for the meeting where there is space for all the people and an ample parking area; make sure the meeting itself moves along without dragging; and follow up after the meeting without delay. The latter point was emphasized as being of great importance.

Regarding shortages, one panelist said that hindsight is very clear, but it is evident that demand at peak seasons is greater than the supply. It was added that despite all efforts to the contrary, shortages are bound to occur in some areas. Manufacturers were urged to consult with suppliers, giving estimates of needs and when deliveries may be made to mutual advantage. Again, adequate storage space was underlined.

Along this line, one speaker reminded that it is impossible to "do business out of an empty wagon," and urged more facilities to keep additional materials on hand rather than operating on a hand-to-mouth basis.

All speakers appeared to agree on this point: There is a tremendous future ahead for the liquid fertilizer industry, but its members must play it smart and advertise.

NET SALES ANNOUNCED

NORFOLK, VA. — Smith-Douglas Co., Inc., announced that for its operating year ending July 31, 1959, net sales were \$45,926,007, as compared with \$39,887,737 in the prior year. Net income after taxes was \$2,749,079, as compared with \$1,475,080 for operating year 1958. Net earnings per common share were \$2.75, as compared with \$1.45 last year. Taxes amounted to \$3.12 per common share for the company's fiscal year which ended July 31. The board declared a quarterly dividend of 30¢ per common share payable Nov. 20 to shareholders of record on Oct. 30, 1959.

Central Chemical Buys Fertilizer Plants

HAGERSTOWN, MD.—Central Chemical Corp., Hagerstown, announced the purchase of the plants of the Green-Leaf Fertilizers Co. located at Lockwood and Andover, Ohio. In addition to fertilizers, Central will add a complete line of agricultural chemicals at these plants and will serve the Lake District from Cleveland, Ohio, to the New York line.

In addition to the plants of the Green-Leaf Fertilizer Co., Central has recently acquired the plant of the Koller Fertilizer Co., Glen Rock, Pa., which will serve the York County area, and is operating a plant at Bridgeville, Del., formerly owned by Newton Chemical & Supply Co. This plant will serve the eastern shore of New Jersey, Delaware, Maryland, and Virginia.

Central has just completed an expansion program at its Hagerstown plant which will double its capacity for the grinding of 75% DDT wettable powder and other related air-mill products. The DDT product is sold primarily to the United Nations and other government agencies.

Plant Food Conference Planned for Arkansas

LITTLE ROCK, ARK.—Plans are being completed for the ninth annual Plant Food Conference to be held at the Lafayette Hotel here Dec. 10-11, according to agricultural officials.

The conference is sponsored by the Arkansas Agricultural Experiment Station, Arkansas Plant Food Educational Society and the Agricultural Extension Service.

Officials will discuss the latest developments in the fertilizer and lime industries, including new developments in research on the agricultural use of plant food elements.

Field research results on fertilization of rice, cotton, soybeans and pastures will be announced. A report on fertilizer demonstrations being conducted in the state will be made.

Highlight of the meeting will be a conference on the importance of lime. Discussions will be held on the response of crops to lime and the problems which the lime vendors encounter in distribution.

Guest speaker at the annual banquet the night of Dec. 10 will be Dr. W. D. Bishop, head of soil testing facilities in Tennessee. Personnel of Arkansas Agricultural Experiment Station and of the extension service will appear on the various programs, discussing recent plant food element research at experiment stations and on individual farms.

Donald Adams, extension soils specialist, said a large group of fertilizer industry officials and representatives of the limestone industry are expected to attend the conference.

Valley Fertilizer Company Forms Arizona Corporation

PHOENIX, ARIZ.—Articles of incorporation have been filed for Valley Fertilizer Co., to do business here at wholesale or retail, listing \$100,000 capitalization and these incorporators: Gene M. McKinley, Tempe, president and John F. Schwartz,

To Handle Maize

LAMESA, TEXAS—Gus Cowart, who has owned the Lamesa Farm Store for the last year, has increased his business to include the handling of maize. Storage facilities are sufficient to take care of 750,000 bu.

The store was one of the first farm service stores in town, as Mr. Cowart did custom application of fertilizers, rented spreaders and applicators, and then added a cotton defoliation service this year.

Cipperly Sees Political Sauce in Charge Of Misuse of Herbicide on Cranberries

— See Story on Page 1 —

By JOHN CIPPERLY

Croplife Washington Correspondent

WASHINGTON—Last week Arthur S. Flemming, secretary of health, education and welfare, burst out with a most sensational report about contamination of cranberries through alleged misuse of a weed killer.

It is noticed that Mr. Flemming prior to the announcement of "discovery" of this condition—one which has existed since the 1957 cranberry crop—recently announced a most favorable report of a private consulting service which commended the Food and Drug Administration in its operations and urged that Congress appropriate more money for FDA public services at the coming session.

The Flemming press conference had the net effect of crucifying all the cranberry producers of the nation with fuzzy statistical data. It appears to have involved only a relatively small amount of carlot shipments of cranberries which it is charged contained residual traces of the chemical weed killer compound—traces which FDA admits are well below any danger point as far as human consumption is involved.

The Flemming press conference—one which may be suspected as a trial balloon of the new secretary for a vice presidential nomination—touched off a veritable panic.

One can only wonder why a cabinet officer would present before an uninformed general press conference such fuzzy data. It concerned only part of the national cranberry crop which had the immediate effect of creating panic for the entire cranberry industry, most of which never used this particular weed-killing compound.

An FDA official told this publication that there was no reason to anticipate such a violent reaction to the press announcement. Such a comment is too simple for digestion.

It is urgent that the chemical industry be informed that up to the eve before this press conference his agency had failed to inform the U.S. Department of Agriculture inspection service of its new standards. At USDA there is maintained an inspection service for all processed fruits and vegetables which use the FDA standards of wholesomeness.

Only at the late date of the morning of the Flemming press conference did FDA notify USDA inspection service of its standards of inspection requirements which involved the alleged contamination of the cranberry crop.

This aspect may mean that FDA may now be embarking under the Flemming approach to curb use of chemical compounds which have heretofore been certified under the FDA act by USDA as useful and necessary in the production of a crop.

The attack on the cranberry industry, a politically impotent group, may be the opening wedge to amend the FDA law. The aim here might be to impose FDA restrictions on the misuse label requirements of the chemical manufacturers to a point where FDA would be authorized to license all farmers who used agricultural chemicals to meet requirements before they could even buy or use any chemical compounds, which might also include fertilizer materials as well as pesticides.

This is no "whimsey," as one chemical official asked this reporter if he were certain of his observations.

In fact it came from a solid source which called the Flemming press conference an "insidious" thing designed

for some purpose beyond his comprehension.

The Flemming press conference may mean the financial ruin of the cranberry industry this year, an event from which it may not recover for many years. It will have accrued effects on the chemical weed-killing activities for an unknown period.

FDA announced at the press conference that it "was looking into the situation to determine if other crops are contaminated."

May it not mean that Mr. Flemming is pointing a finger at all crops?

The attack on the alleged "misuse of a chemical compound" by FDA makes the threat of a farmer licensing system a real one. FDA now is saying that the misuse of labeling instructions does not do the job of protecting the public.

It is significant that FDA recently released a most favorable study of its activities by a private accounting firm.

This study recommended that FDA be granted additional and increased funds for its inspection services in the field of public health protection. May it not be significant that the Flemming press conference was geared to the prior favorable publicity?

CRANBERRIES

(Continued from page 1)

marked for contamination in interstate commerce.

The warning to consumers against the purchase of cranberries or cranberry products on the eleventh hour eve of the industry's biggest holiday season has caused considerable damage to the cranberry growers. Most of these growers have never been involved in mis-use of the chemical compound, yet are caught in a publicity announcement which has caused most of the prominent chain super markets to remove all forms of cranberries from their shelves.

Mr. Flemming took a small risk when he leveled this charge against the cranberry industry. Indeed, he did not confine this charge of danger to public health to that industry alone.

He added other agricultural commodities as under suspicion. Without naming them he includes in public suspicion all agricultural products.

An extract from his press conference statement says, "FDA is looking into the situation to determine whether any other crops are contaminated. If residues are found, the information will immediately be made public and appropriate legal action will be taken."

For the chemical industry engaged in the production of useful chemicals in the expanded need for agricultural production, the announcement is a threat of major proportions.

The action against cranberries affects a small farm group of probably not more than 2,000 growers with a farm income of not more than \$12-14 million.

Penick Acquires Animal Health Firm

NEW YORK—S. B. Penick & Co., New York, has announced the acquisition of controlling interest in Dr. LeGear, Inc., St. Louis, Mo. Dr. LeGear, Inc., manufactures animal health products.

According to Penick officials, the LeGear firm's sales, manufacturing and research activities will remain in St. Louis, and Dr. Daniel H. LeGear will continue as president.

Croplife

A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL INDUSTRY

The regional circulation of this issue is concentrated in the Western states.

Full Fertilization, 100% Effectiveness For Pesticides Seen Two Decades Ahead

WITH 1960 COMING UP, marking the end of one decade and the beginning of another, minds in the industry are thinking ahead in terms of ten year periods . . . of the years 1970, 1980, 1990 and perhaps even into that seemingly far-off time of 2000. This is good. It is the responsibility of business men to look as far ahead as possible and plan their affairs accordingly.

Some interesting predictions were made recently at a conference of farm editors whose projections reached ahead some 20 years. The forum, sponsored by Marsteller, Richard, Gebhardt and Reed, Inc., advertising firm, included some 70 editors and concentrated on some of the latest techniques in scientific agriculture.

Their predictions called for a number of innovations of particular interest to the fertilizer and pesticide trades in particular and, indeed, to all types of supply firms doing business with agriculture. The editors said that by 1980 there will be machines that in one operation can prepare the soil, plant seed, apply high analysis fertilizers at optimum rates and treat against weeds. Also in the picture twenty years hence will be herbicides and insecticides with 100% effectiveness.

The character of many crops will also be altered through breeding techniques, it was predicted. There will be dwarf corn for combine harvest that will grow in narrow rows and set six to ten ears to the stalk; shorter, stiffer-strawed varieties of small grain that will permit heavy fertilization and will produce yields of 100 bu. an acre.

Machinery, likewise, will increase in importance, with human muscles doing less and less work and fewer workers required to produce larger amounts of food. Push-button farm equipment will be developed at a faster rate than has ever been seen before, and bigger-capacity equipment will allow one man to do more work thus helping to offset high labor costs. Six, eight, and ten-row equipment will be widely used.

With all of this stepped-up production, what effect will it have on farm surpluses, currently the bane of farm economists? The editors sized up the situation and decided that farm surpluses will be gradually eliminated while farm size and individual farm income will double between now and 1980. They predicted that farmer-controlled marketing organizations will take over the role presently filled by government, and will gradually bring production into line with demand. Working toward that end will be influences such as the growing population, increasing foreign trade and new uses for agricultural products.

The family farm is definitely not about to become a thing of the past, either, according to the editors. They agreed almost universally, that family-operated farms with larger average acreages, but fewer in number, will emerge over the next two decades. Marginal, unprofitable units will be absorbed by the profitable ones that remain.

Some farms, of course, will not increase their acreages. These will tend to expand their production of specialty crops or livestock as part of the general trend toward specialization.

More use will be found for automation, and it will become practically universal in the livestock and poultry business where feeding, watering, and manure handling will be handled almost entirely by electricity. Meat animals of more efficient breed will be grown and marketed at a rapid pace.

Assuming that these predictions are at least reasonably accurate, for after all, they are based on statements of people who know whereof they speak, everything in the picture points toward a

greater demand for fertilizers, herbicides, and insecticides. Everything seems to hinge on ultra efficiency and the trade knows today that it is the efficient farmer who knows fertilizer purchases are not as much items of cost as they are investments that usually pay off well. The efficient operator also believes in preventing damage to his crops by insects, plant disease or weeds.

When the overwhelming majority of farm operators are of this efficient general type, tonnages should increase on all sides.

AN ENTIRELY DIFFERENT study, yet related to the predictions made by the farm editors mentioned above, is one completed recently by the University of Minnesota's Institute of Agriculture. This survey was to answer, at least partially, the old question, "Why do some farms make more money than others?"

Naturally, there appears to be no single answer, since the problem is complex. However, some of the findings hold significance in the light of the preceding predictions for 1980.

Two surveyors, an agricultural economist and an extension economist, compared the 26 least profitable farms in one section of Minnesota with the average of all farms for 1958. Here are some of their findings:

- The least profitable farms had 5% lower crop yields than the average of all farms.
- They had 16% less return over feed from livestock.
- They kept fewer livestock per acre of cropland.
- They conducted a smaller-size business in terms of labor load, and made less efficient use of the labor as a result.
- They spent a dollar more an acre for crop and machinery expenses.

These factors added up to labor earnings of \$6,600 for the average of all farms, and a net loss of \$99 for the 26 least profitable ones. Naturally, differences between individual farms were even more pronounced, the surveyors said.

Another significant observation is that the average farm size for the entire group was 301 acres, compared to 316 for the least profitable ones. Farm capital outlay was around \$80,000 for both the average and the 26 poor money-makers. Thus, the differences in return can hardly be blamed on farm size or investment capital involved.

Part of the difference can of course be attributed to factors beyond control, such as weather, soil limitations, and prices. However, it is clear that the choice of crops, their efficiency, livestock production, effective marketing, efficient use of labor and control of overhead expenses were highly significant ingredients in the over-all results.

It all boils down to good management, whether the year is 1959, 1960 or 1980. It also says in no uncertain terms that the poor manager must before long throw in the sponge and allow his more knowledgeable neighbor to take over the operation and put those acres on a paying basis.

We rather imagine that many operators of those 26 non-profit enterprises are the type who put on "just a little" fertilizer . . . enough to cost something, but not enough to make any particular difference in crop yield. Thus, they say that all this talk about making money from fertilizer is the bunk.

We'd say that things are looking up for 1960 . . . and certainly in the years between then and 1980. New problems will arise, of course, but we believe that the over-all prognosis is good.



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CROPLIFE is a controlled circulation journal published weekly. Weekly distribution of each issue is made to the fertilizer manufacturers, pesticide formulators and basic chemical manufacturers. In addition, the dealer-distributor-farm adviser segment of the agricultural chemical industry is covered on a regional (crop area) basis with a mailing schedule which covers consecutively, one each week, three geographic regions (South, Midwest and West) of the U.S. On the fourth week, production personnel in fertilizer manufacturing and pesticide formulating plants throughout the U.S. are covered in depth. To those not eligible for this controlled distribution, Croplife's subscription rate is \$5 for one year (\$6 a year outside the U.S.). Single copy price 25¢.

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Published by

THE MILLER PUBLISHING CO.

2501 Wayzata Blvd., Minneapolis, Minn.
(Address Mail to P. O. Box 67, Minneapolis 40, Minn.)



Associated Publications—The Northwestern Miller, The American Baker, Farm Store Merchandising, Feedstuffs, Milling Production, Feedlot, and Professional Nursing Home.

MEETING

MEMOS



Nov. 20—Six county limestone and fertilizer dealers' school, Pittenger Memorial Center, Ball State University, Muncie, Ind.

Nov. 24-25 — Plant Disease Short Course, Texas A&M College, College Station, Texas.

Dec. 7 — Annual Kansas Fertilizer Conference, Manhattan, Kansas.

Dec. 7-9 — 46th annual meeting, Chemical Specialties Manufacturers Assn., Hotel Mayflower, Washington, D.C.

Dec. 8 — Annual Kansas Fertilizer Dealers Conference, Manhattan, Kansas.

Dec. 9-11—Kansas District Fertilizer Dealer-County Agent Training Schools: Dec. 9, Chanute; Dec. 10, El Dorado, and Dec. 11, Wichita.

1960

Jan. 7-8—Colorado Fertilizer Conference, Fort Collins, Colo.

Jan. 7-8—Sixth Annual Mississippi Insect Control Conference, in conjunction with annual meeting of Mississippi Entomological Assn., Mississippi State University, State College, Miss.

Jan. 11-14—Kansas Fertilizer Dealer Meetings: Jan. 11, Hiawatha; Jan. 12, Lawrence; Jan. 13, Abilene, and Jan. 14, Belleville.

Jan. 12-13—Thirteenth Annual Meeting of the Ohio Pesticide Institute, Lincoln Lodge, Columbus, Ohio.

Jan. 13 — New Mexico Agricultural Chemical Conference, third annual meeting, Milton Hall, New Mexico State University, University Park, N.M., Dr. J. Gordon Watts, chairman.

Jan. 20-21—Third Annual Arizona Fertilizer Conference, University of Arizona campus, Tucson, Ariz.

Meeting Memos listed above are being listed in this department this week for the first time.

Nov. 16-20 — National Aviation Trades Assn., 20th annual convention, New Orleans, La.

Nov. 17-18-20 — Dealer-Sales Meetings, sponsored by the Rocky Mountain Plant Food Assn., Nov. 17, Greeley, Colo.; Nov. 18, Pueblo, Colo., and Nov. 20, Grand Junction, Colo.

Nov. 19—General Livestocks—Crops Field Day, University of Arizona, Yuma, Ariz.

Nov. 17-20 — Packaging Machinery Manufacturers Institute Show of 1959, The Coliseum, New York City.

Nov. 24 — Fertilizer Short Course, Capital Grange Hall, Dover, Del.

Nov. 24—Rutgers' Pesticide Dealers Conference, College of Agriculture Campus, Nichol Ave., New Brunswick, N.J.

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Nov. 24—Ninth Semi-Annual Meeting and Midyear Conference, Manufacturing Chemists' Assn., Statler Hilton Hotel, New York.

Nov. 30-Dec. 4—27th Exposition of Chemical Industries, New York Coliseum, New York City.

Nov. 30-Dec. 5—Joint meeting, Entomological Society of Ontario; Entomological Society of Canada and Entomological Society of America, Hotel Sheraton-Cadillac, Detroit, Mich.

Dec. 1-2 — Illinois anhydrous ammonia Assn. Meeting, Law Hall, University of Illinois, Urbana, Ill.

Dec. 1-2—Annual meeting, Carolinas-Virginia Pesticide Formulators Assn., Carolina Hotel, Pinehurst, N.C.

Dec. 2-3—Indiana Fertilizer Conference, Memorial Center, Purdue University, Lafayette, Ind.

Dec. 2-3—Annual Missouri Fertilizer Conference, Columbia, Mo.

Dec. 7-10—Central Canada and North Central Weed Control Conferences, Royal Alexandra Hotel, Winnipeg, Manitoba, Can.

Dec. 7-8—Minnesota Soil Short Course, University of Minnesota Institute of Agriculture, St. Paul, Minn.

Dec. 7-11 — Nebraska Fertilizer Institute anhydrous ammonia workshops, Dec. 7, Lincoln, Neb.; Dec. 8, Hastings, Neb.; Dec. 9, Ogallala, Neb.; Dec. 10, Kearney, Neb.; Dec. 11, Columbus, Neb., Agricultural Ammonia Institute cooperating.

Dec. 8—Minnesota Fertilizer Industry Assn. meeting, University of Minnesota Institute of Agriculture, St. Paul, Minn.

Dec. 8-10—District Fertilizer Dealers and Lime Producers Schools, Dec. 8, Green Bay, Wis., Riverside Ballroom; Dec. 9, Eau Claire, Wis., Eau Claire Hotel, and Dec. 10, Madison, Wis., Wisconsin Center Building, sponsored by the Soils Department, College of Agriculture, University of Wisconsin.

Dec. 9-11—International Crop Protection and Pest Control Exhibition, Seymour Hall, St. Marylebone, London, England.

Dec. 10—Iowa Fertilizer Promotion Workshop, Savary Hotel, Des Moines, Iowa.

Dec. 10-11—Michigan State University Fertilizer Conference, Kellogg Center, East Lansing, Mich.

Dec. 10-11—Arkansas Plant Food Conference, Lafayette Hotel, Little Rock, Ark.

Dec. 11—Ohio Fertilizer and Lime Conference, conference theatre, Ohio Union, Ohio State University, Columbus, Ohio.

1960

Jan. 5-6—Annual Texas Fertilizer Conference, College Station, Texas.

Jan. 6-7 — Wisconsin Pesticide Conference with Industry, Wisconsin Center Bldg., University of Wisconsin, Madison, Wis.

Jan. 6-8—14th Annual Meeting, Northeastern Weed Control Conference, Hotel New Yorker, New York City.

Jan. 12-13 — Nebraska Fertilizer Institute annual convention, Pershing Auditorium, Lincoln, Neb.

Jan. 13-14—Pesticide School, North Carolina State College, Raleigh, N.C.

Jan. 13-15—Ninth Annual Convention, Agricultural Ammonia Institute, Statler Hilton Hotel, Dallas, Texas.

Jan. 14-16—10th Annual Convention of the Agricultural Aircraft Assn., El Mirador Hotel, Palm Springs, Cal.

Jan. 20-21—North West Agricultural Chemicals Industry Conference, Benson Hotel, Portland, Ore., C. O. Barnard, executive secretary.

Jan. 20-22—Thirteenth Annual Southern Weed Conference, Buena Vista Hotel, Biloxi, Miss.

Jan. 21—Northeast Region, National Plant Food Institute fertilizer sales promotion workshop, Hotel Hershey, Hershey, Pa.

Jan. 25—Wisconsin Lime and Fertilizer Day, University of Wisconsin campus, Madison, Wis.

Jan. 25-26—Second Annual Agricultural Pesticide Conference, Purdue University, Lafayette, Ind.

Jan. 25-27—Cotton States Branch, Entomological Society of America, DeSoto Hotel, Savannah, Ga.

Jan. 26-27—South Dakota Fertilizer Dealers Short Course, South Dakota State College, Brookings, S.D.

Jan. 27-28 — Annual Illinois Custom Spray Operators' Training School, University of Illinois, Urbana, Ill.

Jan. 27-29—Symposium on Chemistry of Phosphate-Soil Reactions, Muscle Shoals, Ala.

Jan. 28-29—Annual meeting of the Colorado Agricultural Chemicals Assn., Cosmopolitan Hotel, Denver, Colo.

Feb. 2-4—Pest Control Operators' School, North Carolina State College, Raleigh, N.C.

Feb. 8-9—Southwestern Branch, Entomological Society of America, Hilton Hotel, El Paso, Texas.

Feb. 9-11—Seventh Annual Agricultural Chemicals Conference, Texas Technological College, Lubbock, Texas.

Feb. 11-12 — Midwest Agronomists-Fertilizer Industry meeting, Edgewater Beach Hotel, Chicago, Ill.

Feb. 12—California Ammonia Meeting, Hacienda Hotel, Fresno, Cal.

Feb. 17-18, 23-25—Indiana Ammonia Service School; Feb. 17, Lafayette; Feb. 18, Bedford; Feb. 23, Valparaiso; Feb. 24, Ft. Wayne; Feb. 25, Muncie.

Feb. 17-18—Pest Control Conference, Alabama Polytechnic Institute campus, Auburn, Ala. Sponsored

Classified Ads

Classified advertisements accepted until Tuesday each week for the issue of the following Monday.

Rates: 15¢ per word; minimum charge \$2.25. Situations wanted, 10¢ a word; \$1.50 minimum. Count six words of signature, whether for direct reply or keyed care this office. If advertisement is keyed, care of this office, 25¢ per insertion additional charged for forwarding replies. Commercial advertising not accepted in classified advertising department. Display advertising accepted for insertion at minimum rate of \$11 per column inch.

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WANTED—MANAGER FOR FERTILIZER and farm chemical department of long established, progressive farm supply organization serving Pacific Northwest agriculture. Requires administrative ability and technical knowledge. Advancement opportunities. Give complete resume of age, education, experience and availability in first letter. Address Ad No. 5373, CropLife, Minneapolis 40, Minn.

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by A.P.I. and the Alabama Association for Control of Economic Pests.

Feb. 22-25—Weed Society of America meeting, in conjunction with Western Weed Conference, Cosmopolitan Hotel, Denver, Colo.

March 23-25—North Central Branch, Entomological Society of America, Schroeder Hotel, Milwaukee, Wis.

June 13-18—National Plant Food Institute annual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va.

June 27-29—Pacific Branch, Entomological Society of America, Davenport Hotel, Spokane, Wash.

July 13-15—Eleventh Annual Fertilizer Conference of the Pacific Northwest, Hotel Utah, Salt Lake City; B. R. Bertramson, State College of Washington, Pullman, Wash., chairman.

July 27-29—Great Plains Agricultural Council, 1960 meeting, Laramie, Wyo.

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